SCIENCE
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WILDLIFE REVIEW

APR 23 1973
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NUMBER 146 SEPTEMBER 1972

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WILDLIFE REVIEW

An abstracting service for wildlife management
Issued for the information of cooperators
by the Bureau of Sport Fisheries and Wildlife
Fish and Wildlife Service
UNITED STATES DEPARTMENT OF THE INTERIOR

September 1972 Patuxent Wildlife Research Center, Laurel, Md. 20810 No. 146

Use of funds for printing this publication approved
by the Director of the Bureau of the Budget, December 1, 1970.

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor, and Rebecca M. Reynolds, editorial assistant.

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SOILS

Davis, Hugh T., and others. SOIL SURVEY OF LAMAR, PIKE, AND UPSON COUNTIES, GEORGIA. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* i + 67 p., 8 figs. + single-fold maps based on aerial photos and bound in. Mar. 1972. For sale by Supt. Documents, GPO, Washington, D.C. *WR 146: 2*

Gorman, John L., and others. SOIL SURVEY OF GREENBRIER COUNTY, WEST VIRGINIA. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* i + 95 p., 9 figs. + single-fold maps based on aerial photos and bound in. Apr. 1972. For sale by Supt. Documents, GPO, Washington, D.C. *WR 146: 2*

Hutton, Frank Z., Jr., and others. SOIL SURVEY OF SENECA COUNTY, NEW YORK. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* i + 143 p., 8 figs. + single-fold maps based on aerial photos and bound in. Apr. 1972. For sale by Supt. Documents, GPO, Washington, D.C. *WR 146: 2*

Kunkle, W. Merrill, Garland H. Lipscomb, and Richmond Kinnard. SOIL SURVEY OF DAUPHIN COUNTY, PENNSYLVANIA. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* i + 104 p., 6 figs. + single-fold maps based on aerial photos and bound in. 1972. For sale by Supt. Documents, GPO, Washington, D.C. *WR 146: 2*

Ratcliff, Ivan W., Jr., and Louie W. Dowd. SOIL SURVEY OF HARPER COUNTY, KANSAS. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* i + 79 p., 4 figs. + single-fold maps based on aerial photos and bound in. Dec. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 146: 2*

GENERAL CONSERVATION

Dasmann, Raymond F. ENVIRONMENTAL CONSERVATION. (Third ed.) *John Wiley & Sons, Inc.* (New York, London, Sydney, and Toronto). 473 p., illus., 7 x 10 in. 1972. *WR 146: 2*

In the third edition Dasmann presents new facts for evaluating the current environmental situation. It is written for the beginning university student and the interested public.

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Conway, William G. IN MEMORIAM: LEE SAUNDERS CRANDALL. *Auk* 89(2): 420-428, 1 fig. Apr. 1972. *WR 146: 2*

[Zool. Park, Bronx Park, New York, N.Y.] Through 61 years of association with the New York Zoological Society, Crandall earned the distinction of becoming "beyond question the most highly respected zoo man in America."

PLANTS--FLORAS, COMMUNITIES, TAXONOMY

Craighead, Frank C., Sr. THE TREES OF SOUTH FLORIDA / VOLUME I / THE NATURAL ENVIRONMENTS AND THEIR SUCCESSION. *Univ. Miami Press* (Coral Gables, Fla.). 212 p., illus., 5.75 x 8.75 in. 1972. Price $5.95. *WR 146: 3*

This volume presents information pertaining to the numerous plant communities of South Florida. It attempts to point out the interrelations of these plant communities and their changes under the influences of various climatic and edaphic pressures, such as the rising sea, hurricanes, salinity, fire, frost, fresh water variations, as well as others. Both common and scientific names are given.

Evers, Robert A., and Roger P. Link. POISONOUS PLANTS OF THE MIDWEST & THEIR EFFECTS ON LIVESTOCK. *Coll. Agric., Univ. Ill. Urbana, Spec. Publ.* 24. x + 165 p., 47 photos. 1972. Price $2.00, paper. *WR 146: 3*

Written for the general reader as well as for botanists, livestock owners, and veterinarians, this publication can be used as a manual by anyone who is interested in poisonous plants. Each plant is discussed in detail, with sections describing the plant, the habitat in which it usually grows, special conditions, if any, under which the plant poisons animals, control or prevention of poisoning, the toxic principle involved, clinical signs in poisoned animals, necropsy findings in cases of fatal poisoning, and suggested treatment.

Long, Robert W., and Olga Lakela. A FLORA OF TROPICAL FLORIDA / A MANUAL OF THE SEED PLANTS AND FERNS OF SOUTHERN PENINSULAR FLORIDA. *Univ. Miami Press* (Coral Gables, Fla.). xvii + 962 p., 97 [figs.], 6.5 x 9 in. 1971. Price $29.50. *WR 146: 3*

This major work is the first flora devoted especially to the native and naturalized vascular plants of southern Florida--an area long of special interest to both amateur and professional botanists. Diagnostic keys are given for the identification of 179 families, 762 genera, and 1,647 species of flowering plants, gymnosperms, ferns, and fern allies. For each family, genus, species, subspecies, and variety, relevant synonomy, detailed morphological description, chromosome number if known, geographical distribution, and ecological data are given. Scientific names have been brought up-to-date to reflect the correct nomenclature for each plant described.

Weber, William A. ROCKY MOUNTAIN FLORA. *Colo. Assoc. Univ. Press* (Boulder). 438 p., 346 figs. + 8 pls., 5 x 8 in. 1972. Price $8.95. *WR 146: 3*

"A field guide for the identification of the ferns, conifers, and flowering plants of the Southern Rocky Mountains from Pikes Peak to Rocky Mountain National Park and from the plains to the Continental Divide."

PLANTS--FOREST SURVEYS

Ferguson, Roland H., and Neal P. Kingsley. THE TIMBER RESOURCES OF MAINE. *U.S. For. Serv. Resour. Bull. NE-26.* 129 p., illus. 1972. *WR 146: 3*

[NE Forest Exp. Sta., Upper Darby, Pa.] Abstract: A statistical and analytical report of the second forest survey of Maine by the USDA Forest Service. Statistical findings are based on the remeasurement of 0.2-acre plots and new 10-point cluster plots. This report discusses and analyzes trends in forestland area, timber volume, annual growth, and timber removals. Timber products output by forest industries, based upon a canvass of industries in 1970, and the importance of timber to the State's economy, are also discussed. The report includes an outlook for timber supplies during the next 30 years and discusses forest-management opportunities. The report includes 105 tables of statistical data for the State, geographic units, and counties.

Almaca, Carlos. LE CARACTÈRE PARTICULIER DE LA FAUNE IBÉRIQUE (VERTÉBRÉS TERRESTRES). [THE SPECIAL NATURE OF THE IBERIAN FAUNA (TERRESTRIAL VERTEBRATES).] *Bonn. Zool. Beitr.* 22(1/2): 90-100. 1971. [From Biol. Abstr. 53(6), 1972. In French with German summ.] *WR 146: 4*

[Rua Frei Amador Arrais, 5-1° Dto., Lisbon, Portugal.] The autochthonous terrestrial vertebrates of continental Iberia (fresh water fish, amphibians, reptiles with the exception of sea turtles, mammals with the exception of the Chiroptera, Pinnipedia, and Cetacea) form a special faunistic ensemble. About half (95 out of 189) of the specific and subspecific taxa are endemic to the Iberian Peninsula. By groups the figures are as follows: true fresh water fish--73%, amphibians--47%, reptiles--36%, and mammals--53%. The geographic isolation caused by Pyrenees and the Mediterranean is the basis for the formation of such a special fauna. However, other factors such as the very diversified climates and biotopes of Iberia and the influence of the glaciations (a lesser influence than in other European regions) have also played a very important role in the formation of this fauna.

Binns, Niles Allen. AN INVENTORY AND EVALUATION OF THE GAME AND FISH RESOURCES OF THE UPPER GREEN RIVER IN RELATION TO CURRENT AND PROPOSED WATER DEVELOPMENT PROGRAMS. *Ph.D. thesis, Univ. Wyo.* 209 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(1), 1972.] *WR 146: 4*

A total of 327 moose, 1,220 antelope, and 12 mountain sheep were harvested in the Green River Basin in 1969. The average annual elk and deer harvest was 1,260 and 2,590, respectively. These species contributed to the state-wide game harvest as follows: moose, 28%; antelope, 4%; mountain sheep, 11%; elk, 8%; and deer, 4%. The proposed Kendall reservoir would inundate critical moose winter range, which would necessitate a substantial reduction in moose numbers to bring the herd into balance with the remaining habitat. The proposed New Fork Reservoir would result in both summer and winter habitat losses for migrating and resident deer, moose, and antelope herds. Fish and waterfowl would benefit from the Lower Green Reservoir, while the impact would be negative for game animals. Reservoir development at any of the three sites would offer reservoir-based recreation opportunities, such as boating, fishing, and water-skiing.

Bourquin, O., John Vincent, and P. M. Hitchins. THE VERTEBRATES OF THE HLUHLUWE GAME RESERVE--CORRIDOR (STATE-LAND)--UMFOLOZI GAME RESERVE COMPLEX. *Lammergeyer* no. 14. p. 5-119, 61 figs. 1971. *WR 146: 4*

Contains description of the area and description of the vertebrates under the following categories: fish, amphibia, reptiles, mammals, and birds.

Carlquist, Sherwin. HAWAII / A NATURAL HISTORY / GEOLOGY, CLIMATE, NATIVE FLORA AND FAUNA ABOVE THE SHORELINE. *Natural History Press* (Garden City, N.Y.). vi + 463 p., illus., 7.5 x 10.5 in. 1970. Price $19.95. *WR 146: 4*

"Dr. Carlquist's original and informative photographs will enable the reader to locate and identify some eight hundred species of native Hawaiian trees, flowers, fruits, birds, and insects."

Gallopin, G. C. TROPHIC SIMILARITY BETWEEN SPECIES IN A FOOD WEB. *Am. Midl. Nat.* 87(2): 336-345, 4 figs. Apr. 1972. *WR 146: 4*

[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Goodall, David W. POTENTIAL APPLICATIONS OF BIOME MODELLING. *Terre Vie* 26 (1): 118-138, 9 figs. 1972. In English. *WR 146: 4*

[Utah State Univ., Logan.]

Lundelius, Ernest L., Jr., and Bob H. Slaughter, editors. NATURAL HISTORY OF TEXAS CAVES. *Gulf Nat. Hist.* (Box 31097, Dallas, Tex.). 174 p., illus. 1971. Price $7.50. *WR 146: 4*

"This volume is an outgrowth of a symposium on the natural history of Texas caves delivered at the 1970 meetings of the Texas Academy of Science on the campus of Angelo State Univ., San Angelo, Tex." It contains the following

papers: *Cave and karst regions of Texas*, A. Richard Smith; *Vertebrate remains in Texas caves*, E. L. Lundelius, Jr., and Bob H. Slaughter; *Texas clastic cave sediments*, R. Frank; *The invertebrate fauna of Texas caves*, R. W. Mitchell and James E. Reddell; *Fishes of Texas caves*, Clark Hubbs; *Exell's Cave: 1870-1970*, W. K. Davis; *Herpetology of Texas caves*, Gerald G. Raun; *Avian biology and Texas caves*, J. Alan Feduccia; *Use of Texas caves by terrestrial mammals*, Arthur H. Harris; *Bats of Texas caves*, Robert L. Packard and Tony R. Mollhagen; *Archeology of Texas caves*, D. S. Dibble and R. K. Alexander; *Potential hazards to investigators of bat inhabited caves*, S. Edvard Sulkin and Rae Allen; *An ecological reflection on cave conservation*, Frederick R. Gehlbach; *Tales of caves and men*, Lynett Anderson, Reed Hoover, and Ronald Ritchie; and *The Texas Speleological Association*, Pete Lindsley and Rex Shepherd.

Milstead, William W. TOWARD A QUANTIFICATION OF THE ECOLOGICAL NICHE. *Am. Midl. Nat.* 87(2): 346-354. Apr. 1972. *WR 146: 5*
[Univ. Mo., Kansas City.] The suggestion is made that a finite number of broad ecological niches exist in any biome type and that these niches may be defined by comparisons of convergent forms from different continents. Major categories of amphibian and reptilian faunas of southeastern Texas and southeastern Brazil are compared, and frogs of the two areas are morphologically compared, species to species.---From abstr.

Phillips, Lanny, and Milo Richmond. THE DISTRIBUTION OF VERTEBRATES ON THE ISLANDS OF BOONE AND WATAUGA LAKES [TENNESSEE]. *J. Tenn. Acad. Sci.* 46(4): 124-129, illus. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 5*
[East Tenn. State Univ., Johnson City.]

Ringuelet, Raul A. PANORAMA GENERAL DE LA FAUNA Y DE SUS RELACIONES ECOLÓGICAS DEL NORTE ARGENTINO Y DEL DOMINIO SUBTROPICAL. [GENERAL PANORAMA OF THE FAUNA AND ITS ECOLOGIC RELATIONS OF NORTHERN ARGENTINA AND THE SUBTROPICAL DOMAIN.] *Bol. Soc. Argentina Bot.* 11(suppl.): 175-183. 1970. [From Biol. Abstr. 53(9), 1972. In Spanish.] *WR 146: 5*
[Mus. La Plata, La Plata, Argentina.]

Shkorbatov, G. L. [PRINCIPAL FEATURES OF ADAPTATIONS OF BIOLOGICAL SYSTEMS.] *Zh. Obshch. Biol.* 32(2): 131-142. 1971. [From Biol. Abstr. 53(12), 1972. In Russian with English summ.] *WR 146: 5*
[Kharkov State Univ., Kharkov, USSR.] Three groups of adaptations are distinguished with respect to the main types of biological systems: adaptations of coenogenetic systems (biocoenoses), adaptations of phylogenetic systems (populations, species), and adaptations of ontogenetic systems (organisms).

Strange, Ian. WILDLIFE IN THE FALKLANDS. *Oryx* 11(4): 240-257, illus. Jan. 1972. *WR 146: 5*
Includes a list of the breeding birds of the Falklands.

WILDLIFE--NATURAL AREAS & REFUGES

Coimbra-Filho, Adelmar F., and Antonio D. Aldrighi. A RESTAURACÃO DA FAUNA DO PARQUE NACIONAL DA TIJUCA / ESTADO DA GUANABARA, BRASIL. [THE RESTORATION OF THE TIJUCA NATIONAL PARK FAUNA (ESTADO DA GUANABARA, BRAZIL).] *Publ. Avulsas Mus. Nac.* (Rio de Janeiro) no. 57. 30 p., 11 figs. + 2 pls. 1971. In Portuguese with English summ. *WR 146: 5*
[Jardim Zool., Rio de Janeiro, Brazil.]

Kirk, Ruth. EXPLORING YELLOWSTONE. *Univ. Wash. Press* (Seattle & London). 120 p., illus., 9 x 6 in. 1972. Price $2.95, paper. *WR 146: 5*
"Mrs. Kirk includes full descriptions of the plant and animal life of the park, sixty-six photographs, five pages of drawings of flowers and trees for easy identification, five maps including a fold-out map of the entire park, a complete road and trail guide, a directory of services, and an index."

Bazán, Flavio, and Carlos F. Ponce del Prado. VICUÑA / ENDANGERED "CAMEL" OF THE ANDES. *Natl. Parks Environ. J.* 46(7): 18-20, illus. July 1972. *WR 146: 6*
"It is, then, in the best interests of both the vicuña and the countries of the region where the animal occurs naturally to go ahead with a joint binational or multinational protection and development program; to engage at full scale in the activities mentioned above to build up the vicuña herds; and finally and most importantly, to attain the best economic use of the resource that allows the species to be perpetuated." One of a series on endangered species.

Coimbra Filho, Adelmar F., and Alceo Magnanini. ANIMAIS RAROS OU EM VIAS DE DESAPARECIMENTO NO BRASIL. [RARE AND ENDANGERED ANIMALS OF BRAZIL.] *An. Brasilei Brasileiro Econ. Florestal* no. 19: 149-177. 1968. In Portuguese. *WR 146: 6*
[Jardim Zool., Rio de Janeiro, Brazil.] Annotated lists and general methods for the preservation of Brazilian rare and endangered animals.

Dennis, John V. RED-COCKADED WOODPECKER. *Natl. Parks Environ. J.* 46(4): 24-27, illus. Apr. 1972. *WR 146: 6*
Effects of forest clearcutting and monoculture on red-cockaded woodpecker, *Dendrocopos borealis*, habitat. One of a series on endangered species.

Hoffmann, Luc. ENDANGERED SPECIES. *An. Acad. Bras. Ciênc.* 41, suppl. p. 323-327. 1969. In English. *WR 146: 6*
[Wildl. Fund, Morges, Switzerland.]

Honegger, René E. AMPHIBIAN AND REPTILE SPECIES APPEARING IN THE RED BOOK VOL. III, LISTED COUNTRY BY COUNTRY OR, IN THE CASE OF ISLAND SPECIES, UNDER OCEANIC REGIONS. *IUCN* (Int. Union Conserv. Nat. Nat. Resour.) *Bull. New Ser.* 3(6), spec. suppl. 8 p. Mar. 1972. [Distributed with June 1972 issue.] *WR 146: 6*
[1110 Morges, Switzerland.]

King, F. Wayne. THE AMERICAN ALLIGATOR. *Natl. Parks Conserv. Mag.* 46(5): 15-18, illus. 1972. *WR 146: 6*
The American alligator is not endangered under the present laws which provide for its protection. One of a series on endangered species.

Kotarba, Ireneusz. KSIEGI RODOWODOWE RZADKICH GATUNKÓW ZWIERZAT ZNAJDUJACYCH SIE W HODOWLACH ZAMKNIETYCH. [PEDIGREE BOOKS OF RARE ANIMAL SPECIES IN CLOSED BREEDING.] *Wszechswiat* 10. p. 266-271, illus. 1970. [From Biol. Abstr. 53 (7), 1972. In Polish.] *WR 146: 6*
[Polish Copernicus Soc. Nat., Warsaw, Poland.] More and more wild living animals vanish. Rational breeding prevents total disappearance of those species based mainly on pedigree books. There are at present books for 21 spp. belonging to the families Bovidae (9 spp.), Giraffidae (1 sp.), Hippopotamidae (1 sp.), Equidae (3 spp.), Rhinocerotidae (3 spp.), Pongidae (3 spp.) and Felidae (1 sp.).

Kotarba, Ireneusz. UWAGI O OCHRONIE KRAJOWYCH KREGOWCÓW. [NOTES ON THE PROTECTION OF POLAND'S VERTEBRATE ANIMALS.] *Chrońmy Przyr. Ojczysta* 26(1): 23-30. Jan.-Feb. 1970. In Polish with English summ. *WR 146: 6*
Discussion of the present Polish legislation concerning the protection of the vertebrate fauna. He established that out of the 613 spp. of vertebrates occurring in Poland, 341 are subject to protection as species, 128 have been reckoned among game animals, and 144 have not been safeguarded by any ordinances to protect them against extermination. According to the author's opinion, the legislation now in force in Poland concerning the protection of animals should be amended.—From summ.

Mittermeier, Russell A. JAMAICA'S ENDANGERED SPECIES. *Oryx* 11(4): 258-262, illus. Jan. 1972. *WR 146: 6*
Description of the present status of one land mammal, the hutia *Geocapromys brownii brownii*, and all the reptiles currently recognized as endangered.

Pimlott, Douglas H. WOLVES AROUND THE WORLD. *Natl. Parks Conserv. Mag.* 46 (8): 18-22, illus. Aug. 1972. *WR 146: 7*
Distribution of *Canis lupus* and *C. rufus*. One of a series on endangered species.

Sick, Helmut. AVES BRASILEIRAS AMEACADAS DE EXTINCÃO E NOCÕES GERAIS DE CONSERVACÃO DE AVES NO BRASIL. [BRAZILIAN BIRDS CONSIDERED TO BE RARE AND ENDANGERED; SOME GENERAL NOTIONS ABOUT THE CONSERVATION OF BIRDS IN BRAZIL.] *An. Acad. Bras. Ciênc.* 41, suppl. p. 204-229. 1969. In Portuguese with English summ. *WR 146: 7*
[Mus. Nac., Rio de Janeiro, Brazil.]

Stephens, William M. FLORIDA MERMAIDS. *Natl. Parks Conserv. Mag.* 46(3): 28-31, illus. Mar. 1972. *WR 146: 7*
The Florida manatees *(Trichechus manatus)* may be extinct in 20 years if they are not protected. One of a series on endangered species.

WILDLIFE--POLLUTION

Ackefors, H. III. EFFECTS OF PARTICULAR POLLUTANTS / MERCURY POLLUTION IN SWEDEN WITH SPECIAL REFERENCE TO CONDITIONS IN THE WATER HABITAT. *Proc. Roy. Soc. London B* 177. p. 365-387, 11 figs. 1971. *WR 146: 7*
[Inst. Marine Res., Lysekil, Sweden.] History of Hg pollution in Sweden. Although the discharge of Hg to water and air have been restricted in Sweden, the whole environment is so heavily contaminated that it will take a long time for the Hg concentrations to decrease. The most serious problem in Sweden is the high Hg concentration in fish.--From abstr.

Adamczyk, Eryk. TRANSLOKACJA DDT W ORGANIZMIE KUR POD WPŁYWEM GŁODU. [TRANSLOCATION OF DDT IN CHICKENS UNDER THE INFLUENCE OF HUNGER.] *Med. Weter.* 27(2): 103-105. 1971. [From Biol. Abstr. 53(9), 1972. In Polish.] *WR 146: 7*
[Coll. Agric., Wrocław, Poland.] Chickens with a level of DDT of more than 200 ppm in their fat, subjected to hunger, showed no clinical symptoms of poisoning. Chickens which underwent hunger showed a translocation of DDT from fat to muscular tissue, the liver and the brain tissue.

Bailey, S., and P. J. Bunyan. INTERPRETATION OF PERSISTENCE AND EFFECTS OF POLYCHLORINATED BIPHENYLS IN BIRDS. *Nature* 236(5340): 34-36, 3 figs. 3 Mar. 1972. *WR 146: 7*
[Pest Infect. Control Lab., Tolworth, Surbiton, Surrey, England.] "In spite of analytical and interpretive difficulties we can conclude that pigeons and quail metabolize polychlorinated biphenyls at a rate generally dependent on the amount of chlorine in the molecule. Further work in our laboratory suggests that some lower chlorinated isomers are metabolized extremely rapidly."

Best, Louis B. FIRST-YEAR EFFECTS OF SAGEBRUSH CONTROL ON TWO SPARROWS. *J. Wildl. Manage.* 36(2): 534-544, 1 fig. Apr. 1972. *WR 146: 7*
[Univ. Ill., Urbana.] Examination of the effects of sagebrush *(Artemisia tridentata)* control on two nongame birds: Brewer's sparrows *(Spizella breweri)* and vesper sparrows *(Pooecetes gramineus)*. Plots were established in sagebrush-grassland habitat and subjected to five treatments: total kill spray, strip spray, partial kill spray, defer control, and open control. Plots were sprayed with 2,4-D in late June 1968. The total kill spray eradicated sagebrush, increased grass coverage, and reduced forb abundance. Similar but less extreme changes followed partial kill. Only on the total kill spray plot did breeding pairs of Brewer's sparrows notably decline (54%) after spraying. No significant change occurred in pairs of vesper sparrows on the sprayed plots.--From abstr.

Bliss, L. C. OIL AND THE ECOLOGY OF THE ARCTIC. *Trans. Roy. Soc. Canada* 8: 361-372, illus. 1970. [From Biol. Abstr. 53(12), 1972.] *WR 146: 8*
[Univ. Alberta, Edmonton, Alberta, Canada.] The ecological problems presented by large-scale arctic operations and the means of lessening the impact of these operations so as to maintain a favorable arctic environment for future generations are discussed.

Blus, Lawrence J., Charles D. Gish, Andre A. Belisle, and Richard M. Prouty. LOGARITHMIC RELATIONSHIP OF DDE RESIDUES TO EGGSHELL THINNING. *Nature* 235(5338): 376-377, 1 fig. 18 Feb. 1972. *WR 146: 8*
[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: A concentration-effect relationship seems to exist between DDE in eggs and shell thinning. It seems to follow a mathematically similar pattern in different species though it seems to operate at different levels.

Cordes, Carroll Lloyd. COMPARATIVE STUDY OF THE UPTAKE, STORAGE, AND LOSS OF DDT IN SMALL MAMMALS. *Ph.D. thesis, N.C. State Univ.* (Raleigh). 163 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 8*
The uptake, storage, and loss of DDT in laboratory *Mus musculus* of two strains and in wild-caught *Mus musculus, Peromyscus leucopus, P. maniculatus,* and *Ochrotomys nuttalli* is investigated by measuring residues in body lipids, urine, and feces after short-term exposure to DDT-treated diets. Two methods of residue analysis used--gas-liquid chromatography and liquid scintillation--are compared.

Dahlgren, Robert B., Robert J. Bury, Raymond L. Linder, and Russell F. Reidinger, Jr. RESIDUE LEVELS AND HISTOPATHOLOGY IN PHEASANTS GIVEN POLYCHLORINATED BIPHENYLS. *J. Wildl. Manage.* 36(2): 524-533, 1 fig. Apr. 1972. *WR 146: 8*
[S. Dak. Coop. Wildl. Res. Unit, Brookings.] Abstract: Eleven-week-old pheasants *(Phasianus colchicus)* were given one capsule per day containing 10, 20, or 210 mg polychlorinated biphenyls (PCB, Aroclor 1254). Other pheasants, 6-9 months old, were given capsules containing 50 or 100 mg PCB every 3.5 days for 5 weeks. One group of birds was starved for use in histologic comparisons. Brain, liver, and breast-muscle samples were removed from some birds for residue analysis. Some birds were necropsied, their organ weights recorded, and slides made of selected tissues for histologic examination. Birds were killed by PCB at all levels given, and the amount and timing of mortality were related to the dose. One bird died as soon as 1.3 days after the administration of the first 210-mg capsule, and one bird on 10 mg daily survived for 8 months, at which time it was sacrificed. The heaviest birds lived the longest and lost the greatest percentage of their weights before death. Although birds given 210 mg daily stopped eating, birds that were starved took longer to die and lost a greater percentage of their weights before death. Birds that died from 210 mg daily had PCB brain residue levels averaging 520 ± 110 ppm standard deviation, liver levels of 2,500 ± 2,000 ppm, and muscle levels of 140 ± 53 ppm. Treated birds on 210 mg that were sacrificed at the same time others were dying on 210 mg had levels overlapping those of birds that died; the least overlap occurred in brain tissue. The levels in tissues of sacrificed birds were: brain, 370 ± 65 ppm; liver, 1,900 ± 1,300 ppm; and muscle, 83 ± 17 ppm. A brain residue level of 300 to 400 ppm generally indicated death due to PCB toxicosis. Birds that died of PCB had consistently smaller hearts and very small, shrunken spleens due to lymphocyte depletion.

Fowle, C. David. EFFECTS OF PHOSPHAMIDON ON FOREST BIRDS IN NEW BRUNSWICK. *Canadian Wildl. Serv. Rep. Ser.* no. 6. 25 p., illus. 1972. In English with French summ. Price $1.00. *WR 146: 8*
Abstract: The effects on birds of the operational use of phosphamidon in a spruce budworm control program in the forests of New Brunswick were assessed. Emissions from spray aircraft of greater than 0.25 lb./acre (0.28 kg/hectare) may be hazardous to birds, especially with fine atomization of the spray. Field observations and experiments with captive birds confirmed that lethal or intoxicating doses may be absorbed through the feet from sprayed vegetation or may be ingested. The oral lethal dose for small forest birds seems to lie between 1 and 3 mg/kg.

Friend, M., and D. O. Trainer. DUCK HEPATITIS VIRUS INTERACTIONS WITH DDT AND DIELDRIN IN ADULT MALLARDS. *Bull. Environ. Contam. Toxicol.* 7(4): 202-206, 1 fig. Apr. 1972. *WR 146: 9*
[Univ. Wis., Madison.]

Gaskin, D. E., M. Holdrinet, and R. Frank. ORGANOCHLORINE PESTICIDE RESIDUES IN HARBOUR PORPOISES FROM THE BAY OF FUNDY REGION. *Nature* 233(5320): 499-500. 15 Oct. 1971. *WR 146: 9*
[Univ. Guelph, Guelph, Ontario, Canada.] High levels of organochlorine pesticide residues are reported in harbor porpoises, *Phocoena phocoena*, from the Bay of Fundy.

Gilbertson, M., and L. M. Reynolds. HEXACHLOROBENZENE (HCB) IN THE EGGS OF COMMON TERNS IN HAMILTON HARBOUR, ONTARIO. *Bull. Environ. Contam. Toxicol.* 7 (6): 371-373. June 1972. *WR 146: 9*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] *"Sterna hirundo."*

Granger, Jean-Maurice. COMPUTER MAPPING AS AN AID IN AIR-POLLUTION STUDIES: MONTREAL REGION STUDY. *Sarracenia* no. 15. p. 43-83, 15 figs. Jan. 1972. In English with French abstr. *WR 146: 9*
[Univ. Montreal, Montreal, Quebec, Canada.]

Haynes, Ronnie J. EFFECTS OF DDT ON GLYCOGEN AND LIPID LEVELS IN BOBWHITES. *J. Wildl. Manage.* 36(2): 518-523. Apr. 1972. *WR 146: 9*
[Southern Ill. Univ., Carbondale.] Abstract: One hundred forty-four male bobwhites *(Colinus virginianus)* were fed a sublethal level (100 ppm) of DDT in the diet for 10 weeks to determine changes in the levels of liver glycogen and liver and carcass lipids. The mean level of liver glycogen for the birds fed DDT was decreased, but the difference was not significant [$0.05 < P(t_{124} \geq 1.79) < 0.08$]. No significant effect on the levels of carcass lipids ($P > 0.05$) were observed. However, birds fed DDT had significantly greater ($P < 0.02$) quantities of liver lipids than those not fed DDT.

Heath, Robert G., James W. Spann, Elwood F. Hill, and James F. Kreitzer. COMPARATIVE DIETARY TOXICITIES OF PESTICIDES TO BIRDS. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 152. iv + 57 p. Feb. 1972. For sale by Supt. Documents, GPO, Washington, D.C. Price 60¢. *WR 146: 9*
[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: This report presents measurements of the lethal dietary toxicity of 89 pesticidal chemicals to young bobwhites, Japanese quail, ring-necked pheasants, and mallards. Toxicity is expressed as the median lethal concentration (LC_{50}) of active chemical in a 5-day ad libitum diet. LC_{50}'s and associated statistics are derived by methods of probit analysis. Endrin consistently was the most toxic chemical while aldrin and dieldrin were among the six most toxic chemicals of those tested on all species. In general, organophosphates were less toxic than aldrin or dieldrin, and herbicides were of a low order of toxicity. There were obvious inconsistencies in the relative sensitivity of the four species to various chemicals.

Hill, Elwood F. AVOIDANCE OF LETHAL DIETARY CONCENTRATIONS OF INSECTICIDE BY HOUSE SPARROWS. *J. Wildl. Manage.* 36(2): 635-639. Apr. 1972. *WR 146: 9*
[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: Avoidance of certain insecticides by birds has been observed during subacute toxicity testing. The capability of the house sparrow *(Passer domesticus)* to detect lethal concentrations and to adjust its feeding habits accordingly were tested with the pesticidal compounds Abate, bromophos, Gardona, and DDT. The results indicated that the birds were aware of toxicants in their diet; subsequently, feeding rates were reduced, and if a choice of nontoxic feed was given, they selected nontreated feed. Birds may survive when a choice between treated and nontreated food is available, if the treated food is of moderate to low toxicity. With highly toxic material, mortality may occur even though a choice is available. Temporary avoidance of food treated with Abate was observed even when no choice

was given, but ultimately it was accepted, presumably as an alternative to starvation. Gardona was the most readily accepted pesticide tested, although it was also avoided when a choice was given between treated and untreated feed.

Hill, Elwood F., William E. Dale, and James W. Miles. DDT INTOXICATION IN BIRDS: SUBCHRONIC EFFECTS AND BRAIN RESIDUES. *Toxicol. Appl. Pharmacol.* 20: 502-514, 2 figs. 1971. *WR 146: 10*

[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: After 5 days on ad libitum diets containing 25 to 800 ppm of technical DDT, the concentrations of DDT, DDE, and DDD in the brains of farm-reared bobwhite *(Colinus virginianus)* could be correlated with dietary concentrations. Weight losses were significant when dietary concentrations reached 400 ppm but there were no other toxic signs. A diet of 800 ppm DDT produced mild signs of intoxication and total brain residues of 5.6-22.3 ppm. A diet containing 1600 ppm DDT caused severe toxic signs culminating in convulsions and death. Analysis of the brain showed an average concentration of DDD + DDT to be 28.4 ppm. The average concentrations of DDD + DDT in the brain of various species were: house sparrows *(Passer domesticus)*, 43.2 ppm; wild bobwhite, 31.3 ppm; farm-reared bobwhite, 28.4 ppm; cardinals *(Richmondena cardinalis)*, 26.7 ppm; and blue jays *(Cyanocitta cristata)*, 23.0 ppm. In bobwhite, cardinals, and blue jays concentrations in the brain ranging from 20 to 25 ppm strongly implicate DDT as the lethal agent. A concentration of 32.6 ppm in the brain of house sparrows was indicative of DDT poisoning.

Jefferies, D. J. SOME SUBLETHAL EFFECTS OF pp'-DDT AND ITS METABOLITE pp'-DDE ON BREEDING PASSERINE BIRDS. *Meded. Fac. Landbouwwet. Rijksuniv. Gent.* 36(1): 34-42, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 10*

[Monks Wood Exp. Sta., Abbots Ripton, Huntingdon, England.] (The detection of residues of organochlorine insecticides in nearly all British avian wildlife specimens has been reported.) A passerine bird, the Bengalese Finch, *Lonchura striata*, was used to study the effect of pp'-DDT on the various parameters of the reproductive cycle of a nidicolous species. One hundred and two birds were fed measured quantities of pp'-DDT in the diet for 6 wk before pairing. The test diets were then continued until fledging of the young had occurred. A further 58 birds were used as controls. Clutch sizes in the DDT-fed pairs were similar to those of the controls, but fertility, hatchability and fledging success were reduced. Several other effects of the DDT were noted. These were longer periods prior to ovulation, longer incubation and rearing periods, lighter eggs and smaller newly-hatched young. Tests with a further 52 birds showed that feeding pp'-DDE produces similar sublethal effects to those noted with the parent product.

Jefferies, D. J. ORGANOCHLORINE INSECTICIDE RESIDUES IN BRITISH BATS AND THEIR SIGNIFICANCE. *J. Zool.* (London) 166: 245-263. 1972. *WR 146: 10*

Abstract: As bat populations have been reported as decreasing in several countries and pesticides have been suggested as one of the main causes, a survey of the residue levels in bats from an East Anglian area was undertaken together with laboratory tests to evaluate the amounts found. The analytical results showed that bats are more heavily contaminated with residues of DDT-type material than either insectivorous or carnivorous birds. Laboratory experiments confirmed that bats are more sensitive to DDT than other mammals and the rate of metabolism of *pp'*-DDT to *pp'*-DDE by Pipistrelles is slower than that of a passerine bird. Comparison of field and laboratory results shows that in the area studied during 1968 and 1969, bats were carrying one third of the lethal level of organochlorine insecticides as "background" residues with just under the lethal level after hibernation. This suggests that organochlorine insecticides could have caused population declines in bats in certain areas.

Joiris, C., and P. Martens. TENEUR EN PESTICIDES D'OEUFS DE RAPACES RECOLTES EN BELGIQUE EN 1969. [THE LEVEL OF PESTICIDES IN RAPTOR EGGS COLLECTED IN BELGIUM IN 1969.] *Aves* 8(1): 1-13, illus. 1971. [From Biol. Abstr. 53(11), 1972. In French with English summ.] *WR 146: 10*

[Rev. Bel-Air, 6, Brussels, Belgium.] A series of 15 clutches of birds of prey, totalling 29 unhatched eggs, were collected in the southern part of Belgium

in 1969. Liquid-gas chromatography analysis reveals contamination of all the birds of prey by organochlorine pesticides. The sparrowhawk is an especially contaminated species. Its eggs contained up to 12 ppm of pesticides. The other species, buzzard, kestrel, tawny owl, barn owl, little owl and tengmalm owl, were much less affected and the pesticide content of their eggs did not usually exceed 1 ppm.

Kochert, Michael N. POPULATION STATUS AND CHEMICAL CONTAMINATION IN GOLDEN EAGLES IN SOUTHWESTERN IDAHO. *M.S. thesis, Univ. Idaho.* xi + 102 p., 14 figs. Mar. 1972. *WR 146: 11*

Forty-eight and 66 golden eagle *(Aquila chrysaetos)* nesting pairs were located in southwestern Idaho during 1970 and 1971 respectively. Nesting success was 70.5% in 1970 and 62.2% in 1971. Clutch size averaged 2.0 eggs. An average of 1.4 and 1.1 young hatched and 1.2 and 1.1 fledged per nesting attempt; 1.6 and 1.7 hatched and 1.7 and 1.8 fledged per successful nest in 1970 and 1971 respectively. From 1966-1971 an average of 1.18 eaglets fledged per nesting attempt. Diseases and mortality factors are discussed. During the study 117 eaglets were banded; 107 of these were fitted with color-coded wing markers. Sightings of color-marked eagles and band recoveries were primarily from southern Idaho. Blacktail jackrabbits and desert cottontails constituted 72% of 1302 prey items found in eagle nests. DDE was the predominant organochlorine residue detected in golden eagle eggs and tissue, and tissue of their prey, while DDT and DDD were found in lesser amounts. PCB were also detected. Levels were relatively low and eggshell thinning was not observed. Pheasants contained the highest mercury concentrations of eagle prey but residue levels in eagle kidneys were less than 1 ppm. Isolated cases of elevated mercury levels were found in feathers. Evidence indicates some eaglets accumulated mercury by ingesting contaminated pheasants.--From abstr.

LeBlanc, Fabius, and Jacques De Sloover. EFFET DE L'INDUSTRIALISATION ET DE L'URBANISATION SUR LA VÉGÉTATION ÉPIPHYTE DE MONTRÉAL. [EFFECT OF INDUSTRIALIZATION AND URBANIZATION UPON THE EPIPHYTIC VEGETATION OF MONTREAL.] *Sarracenia* no. 15. p. 1-41, 4 figs., maps. Jan. 1972. In French. *WR 146: 11*

[Univ. Ottawa, Ottawa, Ontario, Canada.]

Le Boeuf, Burney J., and Michael L. Bonnell. DDT IN CALIFORNIA SEA LIONS. *Nature* 234(5324): 108-109. 12 Nov. 1971. *WR 146: 11*

[Crown Coll., Univ. Calif., Santa Cruz.] High concentrations of DDT residues in California sea lions, *Zalophus californianus*, from the coastal waters of California and Baja California, Mexico are reported.

Linder, Raymond L., and Thomas D. Atkins. EFFECTS OF DIELDRIN ON *HETERAKIS GALLINARUM* OF PHEASANTS. *Proc. S. Dak. Acad. Sci.* 50. p. 214-215. 1971. *WR 146: 11*

[S. Dak. State Univ., Brookings.] Summary: Examination of gastro-intestinal tracts from groups of hen pheasants *(Phasianus colchicus)* receiving 0, 2, 4 or 6 mg dieldrin per week for 13 weeks showed no significant differences in number of cecal worms *(Heterakis gallinarum)* among treatment groups at time of necropsy.

Lustick, Sheldon, Terry Voss, and Tony J. Peterle. TRANSLOCATION AND BIOACCUMULATION OF C1-36 IN A TERRESTRIAL SYSTEM (EFFECTS OF DDT ON STEROID METABOLISM AND ENERGETICS IN BOBWHITE QUAIL *(COLINUS VIRGINIANUS)*). *Ohio State Univ. Res. Found. Final Rep.* RF Project 2464 Rep. no. 2. 38 p., 7 figs. 31 Mar. 1972. *WR 146: 11*

[Ohio State Univ., Columbus.] There was an increased enzyme induction in the liver of female bobwhite quail *(Colinus virginianus)* fed low levels (5 ppm) of DDT in their diets, and, consequently, a significant increase in steroid (progesterone) metabolism (a mean of 54% conversion of progesterone to its more polar metabolite in experimentals compared to a mean of 24.1% conversions in controls). Although the mean conversion of testosterone to its polar metabolite (25.1%) in experimental males was greater than in the controls (mean 18.1%) it was only

significantly greater in certain males. There was a correlation ($r = 0.7$ $P < 0.01$) between percent body weight of testes and percent conversion of testosterone to its metabolites (the smaller the testes the greater the conversion). A correlation ($r = 0.66$ $P < 0.02$) was also found between circulating levels of DDE, DDT and testes size (the higher the pesticide level the smaller the testes). Dietary levels of DDT (10, 50, 100, 150 ppm) were found to affect the energetics (oxygen consumption) of bobwhite quail. All DDT treated birds had a higher metabolic rate than the controls, at all ambient temperatures tested except 30°C.--From abstr.

Moriarty, F. PREDICTION OF ADVERSE EFFECTS ON WILDLIFE BY POLLUTANTS. *Meded. Fac. Landbouwwet. Rijksuniv. Gent.* 36(1): 27-33, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 12*
[Monks Wood Exp. Sta., Abbots Ripton, Huntingdon, England.]

Nelson, J. R., L. E. Wookey, C. F. Nockels, and J. V. Shutze. INTERACTION OF VITAMIN A AND DIELDRIN ON MALLARD LIVER LIPIDS AND BIOTIN CONTENT. *Poultry Sci.* 51(3): 747-751. May 1972. *WR 146: 12*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: The effect of chronic ingestion of a low level of dieldrin (1 mg./kg. body weight) was studied on Mallards fed a diet either adequate or deficient in vitamin A. No gross symptoms of dieldrin toxicity were observed after twelve weeks on experimental diets. After five weeks marked foot pad keratinization occurred in pesticide-fed ducks. Vitamin A deficient birds had significantly reduced liver weight when compared to the other treatment ducks. There was no effect of feeding pesticide on vitamin A content of the liver, but biotin per gram of liver was significantly ($P < 0.05$) lower in the pesticide-fed ducks than in the nonpesticide-fed birds. Liver fatty acid composition was altered either by pesticide ingestion or vitamin A deficiency. There were significant ($P < 0.05$) accumulations of stearic and palmitic acids with a comparable reduction of their monoenoic derivatives in the dieldrin-fed ducks when vitamin A was adequate in the diet. There were higher levels of long chain polyunsaturated fatty acids (18:2, 18:3 and 20:4) in the dieldrin-fed birds when vitamin A was deficient. Ingestion of dieldrin at this level had a marked depressant effect on liver biotin content and altered fatty acid composition possibly by interference in enzyme systems involved in lipid metabolism.

Persson, Berith. CHLORINATED HYDROCARBONS AND REPRODUCTION OF A SOUTH SWEDISH POPULATION OF WHITETHROAT *SYLVIA COMMUNIS*. *Oikos* 22(2): 248-255. 1971. In English with Russian abstr. *WR 146: 12*
[Univ. Lund, Lund, Sweden.] The effects of sublethal doses of chlorinated hydrocarbons on the breeding success in a whitethroat *Sylvia communis* population in South Sweden was studied. Thirty-two eggs and 69 young of different ages were collected and analysed. The following was established: All samples contained DDT and its metabolites DDE and DDD, and PCB. EDDT decreased in the young during nestling period. The contents of EDDT in eggs of the same clutch varied less than between eggs of different clutches. Eggs and young containing much EDDT also had the highest quantities of PCB. EDDT was to a higher extent metabolized in older young than in tender young and eggs. Despite the load of chlorinated hydrocarbons the breeding success of the whitethroat population was extraordinarily good.--From abstr.

Poland, J. J., J. B. Kissam, J. K. Reed, and B. D. Barnett. THE UPTAKE OF DDT BY DOMESTIC TURKEYS RANGED ON TREATED CLAY LOAM SOIL. *Poultry Sci.* 51(3): 1024-1026. May 1972. *WR 146: 12*
[Clemson Univ., Clemson, S.C.]

Schafer, Edward W. THE ACUTE ORAL TOXICITY OF 369 PESTICIDAL, PHARMACEUTICAL AND OTHER CHEMICALS TO WILD BIRDS. *Toxicol. Appl. Pharmacol.* 21(3): 315-330. Mar. 1972. *WR 146: 12*
[Denver Wildl. Res. Cent., Denver, Colo.] Abstract: The acute po toxicity of 369 chemicals was determined for 1 or more species of wild birds, always including either red-winged blackbirds or starlings. Of these, 180 chemicals were

toxic to 1 or more species at 100 mg/kg or less. Statistical comparison of redwing, starling and rat data indicated that redwings were more sensitive to chemicals than starlings, and both were more sensitive than rats.

Schwetz, B. A., G. L. Sparschu, and P. J. Gehring. THE EFFECT OF 2,4-DICHLOROPHENOXYACETIC ACID (2,4-D) AND ESTERS OF 2,4-D ON RAT EMBRYONAL, FOETAL AND NEONATAL GROWTH AND DEVELOPMENT. *Food Cosmet. Toxicol.* 9(6): 801-817, illus. 1971. [From Biol. Abstr. 53(12), 1972. In English with French and German summ.] *WR 146: 13*

Shilova, S. A., A. V. Denisova, G. A. Dmitriev, L. D. Voronova, and M. N. Bardier. [EFFECT OF SOME INSECTICIDES UPON THE COMMON MOLE.] *Zool. Zh.* 50(6): 886-892, illus. 1971. [From Biol. Abstr. 53(6), 1972. In Russian with English summ.] *WR 146: 13*

[All-Union Res. Inst. Disinfect. Steril., Minist. Health USSR, Moscow, USSR.] In the spruce forest region with an area of 50 ha (Perm' District) treated with 85% wettable Sevin powder, the secondary harmful effect of the compound upon the common mole *(Talpa europea)* was studied. The concentration was 0.5 g/m^2. Moles were caught 10 days after each treatment and their viscera were analyzed. The chemical analysis of 185 biological samples (66 moles) showed the presence of Sevin in 83.3 ± 4.5%. Its content was the highest in the genitalia: up to 20.0 mg/kg (12.5 on the average) in the uterus. The sharp decrease in numbers of moles immediately after treatments and the mass death of earthworms, principal food of moles, were noted. Data are given about Sevin content in slugs, ants, ground beetles, and earthworms. It is suggested that the sharp decrease in numbers of moles is caused by both the death of single specimens and food deficiency.

Simpson, Charles F., N. P. Thompson, and J. T. Neilson. EFFECT OF LONG-TERM FEEDING OF DDT TO TURKEYS. *Bull. Environ. Contam. Toxicol.* 7(5): 277-283. May 1972. *WR 146: 13*

[Univ. Fla., Gainesville.]

Spronk, N., and G. C. Hartog. MERCURY IN BIRDS OF PREY. *Ardea* 59(1/2): 34-37, illus. 1971. [From Biol. Abstr. 53(5), 1972. In English with Dutch summ.] *WR 146: 13*

[Free Univ., Amsterdam, Netherlands.] In the Netherlands, Hg levels have increased in the birds-of-prey *Buteo buteo* and *Accipiter gentilis*. The same tendency was found earlier in Sweden, where the Hg levels increased after 1940 parallel to the increased use of organomercurials in agriculture.

Tejning, S. BIOLOGICAL EFFECTS OF METHYL AND ETHYL MERCURY COMPOUNDS USED AS DISINFECTANTS FOR SEED-GRAIN ON DOMESTIC AND WILD LIFE. *Meded. Fac. Landbouwwet. Rijksuniv. Gent.* 36(1): 50-57, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 13*

[Univ. Hosp., Lund, Sweden.]

Thill, Ronald E., Keith E. Severson, and Yvonne A. Greichus. EFFECTS OF ALDRIN ON YOUNG PHEASANTS UNDER SEMI-NATURAL CONDITIONS. *Bull. Environ. Contam. Toxicol.* 7(2/3): 188-192. Feb.-Mar. 1972. *WR 146: 13*

[S. Dak. State Univ., Brookings.]

Trommer, Günther. HOHE PESTIZIDRÜCKSTÄNDE IN UNEBRÜTETEN SPERBEREIERN. [HIGH PESTICIDE RESIDUES IN UNINCUBATED SPARROW HAWK EGGS.] *Ornithol. Mitt.* 23 (9): 170-171. Sept. 1971. In German. *WR 146: 13*

[Mohrenstrasse 9b, Coburg, Germany.] DDE, PCB, HCB.

Valtonen, Matti, and Matti Helminen. HAVAINTOJA RIISTAELÄINTEN SUHTAUTUMISESTA SUOMETSIEN PK-LANNOKSEEN MAASTOSSA. [OBSERVATIONS ON THE REACTION OF GAME ANIMALS TOWARDS PK-FERTILIZER.] *Suom. Elainlaakaril.* 77(12): 438-440. 1971. [From Biol. Abstr. 53(11), 1972. In Finnish with English summ.] *WR 146: 13*

Field trials were performed in 1970 and 1971 in various parts of Finland, concerning the reaction of free living game towards PK fertilizer 24-15 (P_2O_5--K_2O)

intended for fertilizing swampy forests. Three torn sacks of the fertilizer were placed at each observation point. By observation of tracks, it was concluded that wild animals showed no interest in the fertilizer, although animals on several occasions were observed in close vicinity of the sacks. In late winter of 1971, hay, salt and licking stone were included in one of the trials, and only 1 hare showed interest in the licking stone.

Vance, J. DIELDRIN POISONING AFFECTS DEER. *Outdoor Am.* 36(10): 3. Oct. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 14*

Wolfe, Carl W., William L. Baxter, and J. D. Munson. EFFECTS OF PARATHION ON YOUNG PHEASANTS. *Univ. Nebr. Coll. Agric. Q.* 18(2): 4-6, 3 figs. Summer 1971. *WR 146: 14*

[Nebr. Game & Parks Comm., Lincoln.] "Research we did last year indicates that a single spraying of milo with the recommended 8 ounces of parathion per acre will not necessarily kill any young pheasants. However, we also find indications that a second spraying within 15 days might kill some. Our reason for the research was to learn the effect on wildlife since spraying milo fields for greenbugs started in 1968."

Wright, Fred C., Jayme C. Riner, and Royce L. Younger. RESIDUES IN CHICKENS GIVEN DDT. *J. Agric. Food Chem.* 20(1): 17-19, illus. 1972. [From Biol. Abstr. 53(10), 1972.] *WR 146: 14*

[Agric. Res. Serv., Kerrville, Tex.]

Zitko, V., O. Hutzinger, W. D. Jamieson, and P. M. K. Choi. POLYCHLORINATED TERPHENYLS IN THE ENVIRONMENT. *Bull. Environ. Contam. Toxicol.* 7(4): 200-201, 1 fig. Apr. 1972. *WR 146: 14*

The detection of polychlorinated terphenyls (PCT) in eggs and fatty tissue of herring gulls *(Larus argentatus)* from Bay of Fundy, Canada.

WILDLIFE--PARASITES & DISEASES

Hoffmann, G., and M. Lindau. ZECKEN AN NUTZ- UND WILDTIEREN IN NIGER. [TICKS FROM FARM AND WILD ANIMALS IN NIGER.] *Z. Angew. Entomol.* 69(1): 72-82. 1971. [From Biol. Abstr. 53(9), 1972. In German with English summ.] *WR 146: 14*

[Inst. Vet.-Parasitol., Berlin, Germany.]

Munday, B. L. A SEROLOGICAL STUDY OF SOME INFECTIOUS DISEASES OF TASMANIAN WILDLIFE. *J. Wildl. Dis.* 8(2): 169-175. Apr. 1972. *WR 146: 14*

[Mt. Pleasant Lab., P.O. Box 46, Launceston South, Tasmania, Australia.] Twenty-six species of fauna were examined for the presence of antibodies in their sera.--From abstr.

Skrjabin, K. I., editor. KEY TO PARASITIC NEMATODES / VOL. 1 / SPIRURATA AND FILARIATA. *Published for the U.S. Department of Agriculture and the National Science Foundation, Washington, D.C., by the Israel Program for Scientific Translations* (Jerusalem). TT 68-50330. xi + 497 p., 206 figs. 1968. Russian original by the Academy of Science of the USSR in 1949. [Translation available from the U.S. Dep. Commerce, Clearinghouse for Federal Scientific and Technical Information, Springfield, Va.] *WR 146: 14*

Smith, John M. B., F. M. Rush-Munro, and M. McCarthy. ANIMALS AS A RESERVOIR OF HUMAN RINGWORM IN NEW ZEALAND. *Australasian J. Dermatol.* 10(3): 169-182, illus. 1969. [From Biol. Abstr. 53(6), 1972.] *WR 146: 14*

[Univ. Otago Med. Sch., Dunedin, New Zealand.]

Wilson, Nixon, and W. Wilson Baker. TICKS OF GEORGIA (ACARINA: METASTIGMATA). *Bull. Tall Timbers Res. Sta.* no. 10. ii + 29 p. Jan. 1972. *WR 146: 15*
[Univ. Northern Iowa, Cedar Falls.] Study of 3,136 ticks comprising 371 individual collections of 15 spp. and one species group and review of literature, indicates 21 species occur in Georgia at this time. Includes a host-tick index. --From abstr.

Young, E., and P. J. L. Bronkhorst. OVERSTRAINING DISEASE IN GAME. *African Wildl.* 25(2): 51-52. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 15*
[Kruger Nat. Park, South Africa.] During the past few years an increasing number of wild animals has been found prone to the development of a disease complex known as overstraining or capture disease. This affliction has been diagnosed in over 20 spp. of wild mammals and birds in Africa. The finding of characteristic lesion of overstraining disease in freeliving animals confronts the game manager with yet another potential natural mortality factor of unknown amplitude.

WILDLIFE--POPULATIONS & FLUCTUATIONS

Arnason, A. Neil. PARAMETER ESTIMATES FROM MARK-RECAPTURE EXPERIMENTS ON TWO POPULATIONS SUBJECT TO MIGRATION AND DEATH. *Res. Popul. Ecol.* (Kyoto) 13(2): 97-113. Mar. 1972. In English with Japanese summ. *WR 146: 15*
[Edinburgh Univ., Edinburgh, Scotland.] Summary: A model is developed for a triple catch marking experiment on two areas with migration between the two areas and death or emigration occurring. Estimates of the parameters of the model are derived. Some of these estimates are shown to be suitable even under certain restrictions on migration (e.g. animals may be restricted to a single transfer in the course of the experiment). Variances of the estimates were not derived but some rules were developed, based on computer simulations, to guide the experimenter in planning experiments and in judging the precision of his estimates.

Chernov, Y. I. [NOTION OF "ANIMAL POPULATION" AND PRINCIPLES OF GEOZOOLOGICAL STUDIES.] *Zh. Obshch. Biol.* 32(4): 425-438. 1970. [From Biol. Abstr. 53(7), 1972. In Russian with English summ.] *WR 146: 15*

Watson, Adam. ANIMAL POPULATION ECOLOGY. *Sci. Prog.* 59(236): 451-474. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 15*
[Nat. Conserv., Banchory, Scotland.] Population ecology is considered at three levels of organization: individual, population and community or ecosystem. This article emphasizes populations, but mentions the other levels to indicate how populations are affected by them.

WILDLIFE--BIOMETRICS

Cormack, R. M. THE LOGIC OF CAPTURE-RECAPTURE ESTIMATES. *Biometrics* 28(2): 337-343. June 1972. In English with French summ. *WR 146: 15*
[Univ. Edinburgh, Edinburgh, Scotland.]

WILDLIFE--TECHNIQUES

Bourliere, Francois. THE ESTIMATION OF HIGHER VERTEBRATE NUMBERS IN TROPICAL FOREST ENVIRONMENTS. *An. Acad. Bras. Ciênc.* 41, suppl. p. 23-28. 1969. In English with Portuguese summ. *WR 146: 15*
[Commission Ecol., IUCN, Paris, France.] Four methods seem to fit the tropical forest environment particularly: (a) the line trapping for small ground living mammals, (b) the drive census for ungulates and carnivores, (c) the two-step census, for social primates and birds and (d) the capture-recapture method,

with mist-nets, for small birds. In most cases, the techniques mentioned above cannot provide actual density figures, but only approximate indices of density which are nonetheless useful to follow up major population trends over a number of years.--From summ.

Formozov, A. N., and V. E. Sokolov. METHODS OF CENSUSING TERRESTRIAL VERTEBRATES IN THE USSR. *An. Acad. Bras. Ciênc.* 41, suppl. p. 53-69. 1969. In English. *WR 146: 16*
[Inst. Geogr. USSR Acad. Sci., Moscow, USSR.]

Otero, Joseph G., and Richard W. Dapson. PROCEDURES IN THE BIOCHEMICAL ESTIMATION OF AGE OF VERTEBRATES. *Res. Popul. Ecol.* (Kyoto) 13(2): 152-160, 2 figs. Mar. 1972. In English with Japanese summ. *WR 146: 16*
[Univ. Mich., Flint.] Summary: The most accurate method known to date for estimating age of wild vertebrates involves biochemical assay of eye lens proteins. Laboratory procedures that may be unfamiliar to many ecologists are described in detail. The method is based on precise changes in the amount of insoluble lens protein, and consists of two procedures: obtaining the appropriate lens fraction, and quantitatively analyzing its protein composition. Lenses are homogenized, and the insoluble fraction isolated by centrifugation. Protein content is measured colorimetrically by using the Lowry test. Instructions are given for single and double-beam spectrophotometers.

Patton, David R., Robert T. Dickie, Erwin L. Boeker, and Virgil E. Scott. A TRANSMITTER FOR TRACKING WILDLIFE. *U.S. For. Serv. Res. Note RM-114.* 4 p., 5 figs. 1968 (revised 1970). *WR 146: 16*
Abstract: Schematics are presented for a transmitter with an amplifier stage to increase receiving distance. Weight of the transmitter with one battery is 2 ounces, maximum battery life is 45 days, and maximum receiving distance is 2.5 miles.

Perry, John. MODERN ZOO TECHNIQUES IN WILDLIFE CONSERVATION AND CONSERVATION EDUCATION. *An. Acad. Bras. Ciênc.* 41, suppl. p. 93-99. 1969. In English with Portuguese summ. *WR 146: 16*
[Nat. Zool. Park, Washington, D.C.]

Will, Gary B., and Earl F. Patric. A CONTRIBUTION TOWARD A BIBLIOGRAPHY ON WILDLIFE TELEMETRY AND RADIO TRACKING. *N.Y. State Dep. Environ. Conserv.* 58 p. June 1972. *WR 146: 16*
[Delmar Wildl. Res. Lab., Delmar, N.Y.] A bibliography of more than 600 references relating to wildlife telemetry and radio tracking, including 200 current research projects in telemetry and tracking now under way.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Ajayi, S. S. WILDLIFE AS A SOURCE OF PROTEIN IN NIGERIA: SOME PRIORITIES FOR DEVELOPMENT. *Nigerian Field* 36(3): 115-127. July 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 16*

Baer, Robert Lynn. OPTIMAL CONTROL AND THE MANAGEMENT OF ECOLOGICAL SYSTEMS. *Ph.D. thesis, Univ. Pa.* 202 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32 (12), 1972.] *WR 146: 16*
Three examples of wildlife management optimal control problems are given. The time optimal control problems are solved using the pair-interchange, penalty-function gradient search, and one step incremental gradient methods. Rabbits and foxes population dynamics are modeled using nonlinear difference equations. The dynamic behavior of the system from several initial states is considered. The rabbit pest problem in Australia is modeled and solved as an optimal control problem. A nonlinear buffalo herd population dynamic model is developed. The shortcomings of a linear representation of the buffalo herd system are discussed. A nonlinear deer herd model is formulated which includes deer harvesting and food

resource increases as control measures. Deer herd size, structure, food resource availability, and herd fitness are, therefore, all under managerial control. The desired state of the deer herd system is determined by solving a linear steady state optimization problem at several different fitness levels. Time optimal control is then used to move the state of the system to this desired state from several initial states.

Lawrence, Charles H. METHODS OF ENFORCEMENT OF WILDLIFE PROTECTIVE MEASURES. *An. Acad. Bras. Ciênc.* 41, suppl. p. 281-303. 1969. In English with Portuguese summ. *WR 146: 17*

[Bur. Sport Fish. & Wildl., Washington, D.C.] Review of specialized equipment and techniques used in various regions of the U.S.

WILDLIFE--HUNTING AREAS & PROBLEMS

Bond, Robert S., and James C. Whittaker. HUNTER-FISHERMAN CHARACTERISTICS: FACTORS IN WILDLIFE MANAGEMENT AND POLICY DECISIONS. *Recreation Symp. Proc.* (NE Forest Exp. Sta.). p. 128-134. 1971. *WR 146: 17*

Abstract: Research on the characteristics and motivations of hunters and fishermen is examined for factors important to resource managers and policy-makers. Characteristics related to the learning experience, time for participation, utilization and accessibility of the resource base, and the type of fish and game harvested are considered. Motivational research, although in its infancy, suggests that participation in these sport activities has importance other than for only the taking of fish or game. In-depth motivation research is needed.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Berryman, Jack H. THE PRINCIPLES OF PREDATOR CONTROL. *J. Wildl. Manage.* 36 (2): 395-400. Apr. 1972. *WR 146: 17*

[Bur. Sport Fish. & Wildl., Washington, D.C.] Predator control or management cuts across the field of wildlife ecology and management; decisions for control are inseparable from other resource plans and decisions. Carnivores, omnivores, herbivores, and scavengers sometimes develop predatory tendencies and require control. Predator control should be practiced only when it is essential to accomplish planned management objectives including disease suppression, wildlife protection, and domestic animal protection.--From abstr.

Bury, R. Bruce. SMALL MAMMALS AND OTHER PREY IN THE DIET OF THE PACIFIC GIANT SALAMANDER *(DICAMPTODON ENSATUS)*. *Am. Midl. Nat.* 87(2): 524-526. Apr. 1972. *WR 146: 17*

[Univ. Calif., Berkeley.] Abstract: The gut contents of 12 adult *Dicamptodon ensatus* contained the remains of nine mammals, one lizard, two salamanders, large-sized land invertebrates and much debris. Captive salamanders were voracious and had a formidable bite. In certain situations adult *Dicamptodon* may be important predators of small vertebrates and large terrestrial invertebrates.

Clark, Frank W. INFLUENCE OF JACKRABBIT DENSITY ON COYOTE POPULATION CHANGE. *J. Wildl. Manage.* 36(2): 343-356, 5 figs. Apr. 1972. *WR 146: 17*

[Utah State Univ., Logan.] Summary of part of the findings of a long-term study of coyote *(Canis latrans)* populations being conducted on a 700-square-mile study area in northwestern Utah and south-central Idaho. Coyotes in this area have fluctuated markedly from 1963 to 1970. The circumstances of these changes and their possible interactions with population changes of black-tailed jackrabbits *(Lepus californicus)* are explored. The jackrabbit is a prominent herbivore in the study area historically subject to marked population changes.

Cole, Glen F. GRIZZLY BEAR-ELK RELATIONSHIPS IN YELLOWSTONE NATIONAL PARK. *J. Wildl. Manage.* 36(2): 556-561. Apr. 1972. *WR 146: 18*

[Natl. Park Serv., Yellowstone Natl. Park, Wyo.] Abstract: The elk *(Cervus canadensis)* population was mainly self-regulated by density-influenced mortality from intraspecific competition for food and compensating natality and survival. Mortality higher than usual was mainly due to weather that also increased the vulnerability of elk to predation by grizzly bears *(Ursus arctos)*. Grizzly predation with competitive scavenging was a nonessential but assisting adjunct to other natural processes that regulated the elk population. As an interacting unit, bears of different social rank and an associated scavenger fauna probably helped to dampen elk population fluctuations by culling animals with low-energy reserves. The presence of a grizzly population in Yellowstone Park appears essential to have representative natural equilibriums among interacting secondary consumers, to maintain natural relationships between secondary and primary consumers, and to retain the scientific values of ecological systems with an intact native biota.

Hornocker, Maurice G. PREDATOR ECOLOGY AND MANAGEMENT--WHAT NOW? *J. Wildl. Manage.* 36(2): 401-404. Apr. 1972. *WR 146: 18*

[Univ. Idaho, Moscow.] Abstract: Research is needed regarding not only the ecology and biology of predatory species but sociological and economic problems as well. Few comparisons of exploited and unexploited predator populations have been made, and no appraisal of the effectiveness of long-term killing has ever been carried out. Current control programs concern all wildlife managers. The major problem with implementing soundly based control programs lies with the field men. The answer suggested for this problem is to professionalize control agencies at all personnel levels. Public education, as it relates to predator control, has been inadequate and should be improved. Predator management and not traditional control should be stressed.

Kaiser, G. E. EINE NEUE METHODE ZUR ERFASSUNG OEKOLOGISCHER DATEN DES MAEUSEBUSSARDS *(BUTEO BUTEO)* UND DER FELDMAUS *(MICROTUS ARVALIS)*. [A NEW METHOD OF GATHERING ECOLOGICAL DATA ON THE COMMON BUZZARD *(BUTEO BUTEO)* AND ON THE FIELD MOUSE *(MICROTUS ARVALIS).*] *Oecologia* (Berlin) 7(3): 290-308, illus. 1971. [From Biol. Abstr. 53(8), 1972. In German with English summ.] *WR 146: 18*

[Bayernwerk AG, Munich, Germany.]

Kolenosky, George B. WOLF PREDATION ON WINTERING DEER IN EAST-CENTRAL ONTARIO. *J. Wildl. Manage.* 36(2): 357-369, 2 figs. Apr. 1972. *WR 146: 18*

[Ontario Dep. Lands & Forests, Southern Res. Sta., Maple, Canada.] Abstract: Quantitative data on predation of white-tailed deer *(Odocoileus virginianus)* by wolves *(Canis lupus)* in east-central Ontario were obtained by following a pack of eight wolves from January 11 to March 20, 1969. Data on sex and age of deer killed during the winters of 1964 to 1969 and success of hunts by wolves in 1968 and 1969 have been included. During the main winter of study, the pack travelled a total of 327 km over a period of 46 days for an average daily travel rate of 7.1 km. The maximum range of the group during the period of surveillance encompassed 224 km^2. The pack killed 29 deer during 63 days, or one deer per 2.2 days. Distances travelled between kills ranged from 0.3 to 43.4 km and averaged 14.7. The amount of food available per wolf per day was 3.67 kg. The calculated daily food consumption was 0.10 kg per kg of wolf per day. The average age (2.43) of deer killed by wolves was greater than the average age (2.02) of deer killed by hunters. The sex ratio of 42 adult deer killed by wolves was 250 males:100 females; in a sample of 290 hunter-killed deer the ratio was 92:100. In 1968, the hunting success of wolves was 25% compared with 63% in 1969. It was calculated that during the 5-month winter period, the wolves removed 9 to 11% of the 730 deer present when winter began.

Koplin, James R. MEASURING PREDATOR IMPACT OF WOODPECKERS ON SPRUCE BEETLES. *J. Wildl. Manage.* 36(2): 308-320, 2 figs. Apr. 1972. *WR 146: 19*

[Colo. State Univ., Fort Collins.] A deterministic model incorporating food requirements of free-living woodpeckers (Picidae), average number of prey per woodpecker stomach, population density of woodpeckers, and air temperature as inputs, and yielding number of prey consumed as output, was formulated to predict predatory impact of three individual species of woodpeckers on endemic, epidemic, and pan-epidemic populations of larval spruce beetles *(Dendroctonus obesus)*. Resultant predictions compared favorably with estimates made by measuring relative survival of larvae inside and outside of woodpecker exclosures. The model predicted that northern three-toed woodpeckers *(Picoides tridactylus)* were the most effective and downy woodpeckers *(Dendrocopos pubescens)* the least effective picid predators of larval spruce beetles.--From abstr.

Korschgen, Leroy J., and Henry B. Stuart. TWENTY YEARS OF AVIAN PREDATOR-SMALL MAMMAL RELATIONSHIPS IN MISSOURI. *J. Wildl. Manage.* 36(2): 269-282, 2 figs. Apr. 1972. *WR 146: 19*

[Mo. Dep. Conserv., Columbia.] Foods and predator-prey relationships were ascertained from analyses of 4,651 pellet and stomach samples of great horned owls *(Bubo virginianus)* from the western prairie region of Missouri during the 20-year period, 1949 to 1968. Additional data were obtained from 700 pellets of barred owls *(Strix varia)*, 419 pellets of screech owls *(Otus asio)*, 180 pellets of long-eared owls *(Asio otus)*, and 513 pellets of red-tailed hawks *(Buteo jamaicensis)*. Cottontail rabbits *(Sylvilagus floridanus)* and small rodents (mice and rats) were staple foods for all species. Other mammals and birds occasionally were taken in important amounts.--From abstr.

Lynch, Gerry M. EFFECT OF STRYCHNINE CONTROL ON NEST PREDATORS OF DABBLING DUCKS. *J. Wildl. Manage.* 36(2): 436-440. Apr. 1972. *WR 146: 19*

[Alberta Dep. Lands & Forests, Edson, Alberta, Canada.] Abstract: Densities of major waterfowl nest predators at Delta, Manitoba, were estimated as follows: skunks *(Mephitis mephitis)*, 53.0 per square mile; raccoons *(Procyon lotor)*, 3.3 per square mile; and Franklin's ground squirrels *(Citellus franklinii)*, 1,088 to 1,472 per square mile. Predators destroyed 16% of simulated nests in an area treated with hen eggs injected with strychnine. Thirty-four percent of simulated nests in a control area were destroyed. Results indicate that strychnine poisoning can result in a notable reduction in nest predation where skunks are the major predators.

McCabe, Robert A., and Edward L. Kozicky. A POSITION ON PREDATOR MANAGEMENT. *J. Wildl. Manage.* 36(2): 382-394. Apr. 1972. *WR 146: 19*

[Univ. Wis., Madison.] Ways in which predators may be controlled without greatly disrupting other organisms in the ecosystem are set forth.

Nellis, Carl H., Stephen P. Wetmore, and Lloyd B. Keith. LYNX-PREY INTERACTIONS IN CENTRAL ALBERTA. *J. Wildl. Manage.* 36(2): 320-329, 1 fig. Apr. 1972. *WR 146: 19*

[Univ. Wis., Madison.] A lynx *(Lynx canadensis)* study was conducted in central Alberta in 1964-68. Population densities on 57 square miles in winter decreased from 11 in 1964-65 to 3 in 1966-67, then increased to 9 in 1967-68. The winter diet was comprised of 76% snowshoe hare *(Lepus americanus)*, 9% ruffed grouse *(Bonasa umbellus)*, 3% red squirrel *(Tamiasciurus hudsonicus)*, 10% carrion, and other less important items. The relative importance of the major food items did not change significantly between years, but use of carrion was higher in 1966-67 than in the previous two winters. Daily food requirements in winter were 600 and 400 grams for adult and juvenile lynxes, respectively.--From abstr.

Ogle, Thomas F. PREDATOR-PREY RELATIONSHIPS BETWEEN COYOTES AND WHITE-TAILED DEER. *Northwest Sci.* 45(4): 213-218, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 19*

[Wash. State Univ., Pullman.] The importance of deer to the over-all diet of the coyote, segment of the population most often taken, and conditions in which deer are most vulnerable to predation are discussed.

Paloheimo, Jyri E. A STOCHASTIC THEORY OF SEARCH: IMPLICATIONS FOR PREDATOR-PREY SITUATIONS. *Math. Biosci.* 12(1/2): 105-132, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 20*
[Univ. Toronto, Toronto, Ontario, Canada.]

Sargeant, Alan B. RED FOX SPATIAL CHARACTERISTICS IN RELATION TO WATERFOWL PREDATION. *J. Wildl. Manage.* 36(2): 225-236, 2 figs. Apr. 1972. *WR 146: 20*
[Northern Prairie Wildl. Res. Cent., Jamestown, N. Dak.] Radio-equipped red foxes *(Vulpes vulpes)* were studied in the Cedar Creek area in Minnesota. Remains of 172 adult dabbling ducks and 16 adult American coots *(Fulica americana)* were found at 35 dens. No remains from diving ducks were found. The number of adult ducks per den averaged 1.6, 5.9, and 10.2 for paired townships in regions with relatively low, moderate, and high duck populations, respectively. Eighty-four percent of the ducks were females. The species and sex composition of ducks found at dens during early and late sampling periods reflected the nesting chronology of prairie dabbling ducks. Occupied rearing dens were focal points of red fox travel, and the locations of dens may have had considerable influence on predation. Thirty-five of 38 dens found on the six township study areas were on pastured or idle lands. The distribution of rearing dens on the Sand Lake and Arrowwood national wildlife refuges suggested that, on these areas, fox dens were concentrated because of the topography and land-use practices. Behavior is also discussed including territory and raising of young.--From abstr.

Wagner, Frederic H., and L. Charles Stoddart. INFLUENCE OF COYOTE PREDATION ON BLACK-TAILED JACKRABBIT POPULATIONS IN UTAH. *J. Wildl. Manage.* 36(2): 329-342, 5 figs. Apr. 1972. *WR 146: 20*
[Utah State Univ., Logan.] This report presents data pointing to the possible influence of coyote *(Canis latrans)* predation on the latter years of decline and first 3 years of increase in a population of black-tailed jackrabbits *(Lepus californicus)* in northern Utah from 1962 to 1970.--From abstr.

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Alberta Department of Lands and Forests. TWENTY-SECOND ANNUAL REPORT OF THE DEPARTMENT OF LANDS AND FORESTS OF THE PROVINCE OF ALBERTA FOR THE FISCAL YEAR ENDED MARCH 31ST 1971. *Alberta Dep. Lands Annu. Rep.* 174 p., illus. 1971. *WR 146: 20*
Reports of the directors of the following departments are included: Public Lands, Forestry, Fish and Wildlife, Provincial Parks, and Technical division. Reports by the Administrative Accountant, Education-Information division, and Personnel office are also contained.

Game Conservancy. THE GAME CONSERVANCY ANNUAL REVIEW FOR 1971. *Game Conservancy.* 91 p., illus. 1971. Available at 50d. from the Game Conservancy, Fordingbridge, Hampshire, England. *WR 146: 20*
Several areas of research are reported: pheasant release and tagging programs; partridge management; wild pheasant research; game bird diseases; wildfowl; and hare, fox, and deer research.

Natural Environment Research Council. THE NATURE CONSERVANCY RESEARCH IN SCOTLAND / REPORT FOR 1968-1970. *The Nature Conservancy* (Scottish Headquarters). 98 p., 16 figs. 1970. For sale at 50d. by The Nature Conservancy, 12 Hope Terrace, Edinburgh, Scotland. *WR 146: 20*
Reports of research sections are discussed. The grouse research group reports a study of how populations of wild red grouse *(Lagopus lagopus)* and ptarmigan *(L. mutus)* are limited, particularly the inter-relationships of populations and behavior, food, the physical environment and inheritance. Management considerations are stressed. The range ecology and wetlands research groups also report on their activities. Research on wildfowl and on vertebrate predators are also reported.

Natural Environment Research Council. REPORT OF THE COUNCIL FOR THE PERIOD 1 APRIL 1970 - 31 MARCH 1971. *Her Majesty's Stationery Office* (London). vii + 123 p. + 8 pls. 23 July 1971. *WR 146: 21*
[Alhambra House, 27/33 Charing Cross Road, London, England.] Several categories under the following headings are covered: Earth; Oceans and seas; Inland waters; Countryside; Antarctic research; and Administration.

New Jersey Department of Environmental Protection. ANNUAL REPORT OF THE DIVISION OF FISH, GAME, AND SHELL FISHERIES. (July 1, 1970 to June 30, 1971.) *N.J. Dep. Environ. Prot.* 27 p., illus. 1971. *WR 146: 21*
[N.J. Dep. Environ. Prot., Trenton.] Includes: Financial information; Administration information; and reports by Bureau of Wildlife Management and Bureau of Fisheries Management.

WETLANDS & WILDLIFE

Dirschl, Herman J. EVALUATION OF ECOLOGICAL EFFECTS OF RECENT LOW WATER LEVELS IN THE PEACE-ATHABASCA DELTA. *Canadian Wildl. Serv. Occas. Pap.* no. 13. 28 p., 12 figs. 1972. *WR 146: 21*
"The 1,700-square-mile delta is situated in northeastern Alberta, adjacent to the western extremity of Lake Athabasca. It is largely contained within Wood Buffalo National Park and is important as bison habitat and as a waterfowl breeding, moulting and fall staging area."

Sanderson, Glen C., and Frank C. Bellrose. WILDLIFE HABITAT MANAGEMENT OF WETLANDS. *An. Acad. Bras. Ciênc.* 41, suppl. p. 153-204, 1 fig. 1969. In English with Portuguese summ. *WR 146: 21*
[Ill. Nat. Hist. Surv., Urbana.] Review paper with extensive bibliography.

RANGELAND & WILDLIFE

Black, Hal L., and Neil C. Frischknecht. RELATIVE ABUNDANCE OF MICE ON SEEDED SAGEBRUSH-GRASS RANGE IN RELATION TO GRAZING. *U.S. For. Serv. Res. Pap. INT*-147. 8 p., 2 figs. Sept. 1971. *WR 146: 21*
[Univ. N. Mex., Albuquerque.] No definite correlation was found between relative abundance of any rodent and species of grass.--From abstr.

Conrad, Paul W., and James M. Laughlin. CAN POCKET GOPHERS BE CONTROLLED BY ANHYDROUS AMMONIA (NH_3) ON MOUNTAIN RANGELANDS? *U.S. For. Serv. INT Range Improv. Notes* 16(4): 1-4. 1971. *WR 146: 21*
The control (91 and 94%) attained by using Gophacide and 1080, respectively, was similar to that reported for Gophacide and strychnine-treated grain applied by a burrow builder. The 46% control obtained by using NH_3 was less than half that obtained from the grain baits. However, this control was achieved by using only one application of NH_3 per burrow system, an indication of the need for additional investigations of the efficiency of NH_3 in gopher control.

Nicholson, I. A. SOME EFFECTS OF ANIMAL GRAZING AND BROWSING ON VEGETATION. *Bot. Soc. Edinburgh Trans.* 41(1): 85-94. 1970. [From Biol. Abstr. 53(12), 1972.] *WR 146: 21*
[Nat. Conservancy, Edinburgh, Scotland.] In a study of the ecology and use of range grazings, including the interrelationships between soils, vegetation and animals, it is concluded that the interests of conservation and production run closely parallel.

Paulsen, Harold A., Jr., Elbert H. Reid, and Kenneth W. Parker, chairmen. RANGE AND WILDLIFE HABITAT EVALUATION--A RESEARCH SYMPOSIUM. *U.S. For. Serv. Misc. Publ.* no. 1147. 220 p., illus. May 1970. For sale at $3.00 by Supt. Documents, GPO, Washington, D.C. *WR 146: 21*
The following papers are included: *Definition and components of forage quality*, Donald R. Dietz; *Nutrient requirements of livestock and game*, Lovell K. Halls; *Manipulation of forage quality: Objectives, procedures, and economic*

considerations, Vinson L. Duvall; *Significance of forage quality as a tool in wildlife management*, W. O. Hanson and Justin G. Smith; *Forage quality and animal production: Some statistical problems*, Meredith J. Morris and Jacob L. Kovner; *Environmental influences on nutritional value of forage plants*, William A. Laycock and Donald A. Price; *Comparative nutritive values of forage species*, R. L. Cowan, J. S. Jordan, J. L. Grimes, and J. G. Gill; *Effects of fertilization on quality of range forage*, Don A. Duncan and Lynn O. Hylton, Jr.; *Objectionable characteristics of range plants*, W. F. Mueggler; *Supplementing range forage*, Weldon O. Shepherd and Ralph H. Hughes; *Digestibility trials:* in vivo *techniques*, Henry L. Short; *Digestibility trials:* in vitro *techniques*, Henry A. Pearson; *Relating vegetation measurements to forage composition by animals*, S. Clark Martin; *Determining forage consumption by direct observation of domestic grazing animals*, Ardell J. Bjugstad, Hewlette S. Crawford, and Donald L. Neal; *Direct observations of tamed deer to measure their consumption of natural forage*, O. C. Wallmo and D. J. Neff; *Chemical indicator techniques for determining range forage consumption*, Brent Theurer; *Water intake by cattle as a measure of forage intake and quality*, D. N. Hyder; *Stomach content analyses: A comparison of the rumen vs. esophageal techniques*, Richard W. Rice; *Stomach content analyses: Collections from wild herbivores and birds*, Dean E. Medin; *Stomach content and fecal analysis: Methods of forage identification*, A. Lorin Ward; *Biological relations of rumen flora and fauna*, Julius G. Nagy; *Remote sensing: Review of principles and research in range and wildlife management*, David M. Carneggie; *Practical applications of remote sensing in range resources development and management*, Charles E. Poulton; *70-mm. aerial photography--a remote sensing tool for wild land research and management*, Jack N. Reppert and Richard S. Driscoll; *Animal census and other applications of remote sensing in wildlife management and habitat research in forested areas*, Forest W. Stearns; *Range ecology in the western United States*, Hudson G. Reynolds and Harold A. Paulsen, Jr.; *Current status of range ecology in the Southeast*, J. B. Hilmon; *An ecological classification proposal and its importance in land management*, F. C. Hall; *Use of ecological knowledge to improve big-game range*, Jack E. Schmautz; and *A model to incorporate soil survey and allotment analysis data into range management planning*, Jack E. Schmautz.

FORESTLAND--FORESTRY & ECOLOGY

Tomescu, N., V. G. Radu, P. Tudoran, I. Farcas, and V. Buz. INFLUENTA MICROCLIMEI ASUPRA MACROFAUNEI DIN FRUNZAR. [INFLUENCE OF MICROCLIMATE UPON LEAF-BEARING FOREST MACROFAUNA.] *Stud. Cercet. Biol. Ser. Zool.* 23(1): 53-59, illus. 1971. [From Biol. Abstr. 53(11), 1972. In Romanian with English summ.] *WR 146: 22*

[Univ. "Babes-Bolyai" Cluj, Cluj, Romania.]

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Gysel, Leslie W., John H. Cooley, and Forest Sterns. TIMBER AND WILDLIFE IMPLICATIONS OF PINE CONVERSION METHODS ON POOR OAK SITES. *J. For.* 70(5): 272-274, 2 figs. May 1972. *WR 146: 22*

[Mich. State Univ., East Lansing.] Abstract: Four techniques for establishing red pine were tried on poor sandy sites occupied by low-quality oak stands in the Manistee National Forest, Michigan. A harvest cut followed by summer burning or shearing with a K-G blade resulted in the best conditions for planting and early survival of the planted pine. However, the cost of slash removal and later release to obtain a fully stocked pine stand may not be justified on these sites. Planting before or after a harvest cut, without slash removal, while not as effective as burning for converting to pine, assures some survival and establishment of pine at minimum cost, increases short-term deer browse production, and provides a mixture of both summer and winter cover for a variety of wildlife species.

Schmidt, Wyman C., and Raymond C. Shearer. PONDEROSA PINE SEED--FOR ANIMALS OR TREES? *U.S. For. Serv. Res. Pap. INT*--112. ii + 14 p., 6 figs. Dec. 1971. *WR 146: 23*

[Forestry Sciences Lab., Missoula, Mont.] Abstract: Ponderosa pine *(Pinus ponderosa* Laws.*)* seed development and survival studies in northwestern Montana showed that small forest animals reduced the potential seed crop very little during the 2-year cone development period but they consumed an average of 24 out of 25 pine seeds that matured. Red squirrels *(Tamiasciurus hudsonicus richardsoni* Bachman*)* harvested an average of 66% of the mature cones, and after the seeds were dispersed deer mice *(Peromyscus maniculatus artemisiae* Rhoads*)*, chipmunks *(Eutamias amoenus luteiventris* Allen*)*, and birds consumed the equivalent of an additional 30%. Deer mouse populations apparently fluctuated in direct response to the size of the previous year's seed crop.

Ueckermann, E., and H. Scholz. DER EINFLUSS EINES ZUCKERLECKSTEINES AUF DEN SCHAELUMFANG. [THE INFLUENCE OF A SUGAR-LICK ON THE EXTENT OF BARK-PEELING.] *Z. Jagdwiss.* 17(1): 19-26. 1971. [From Biol. Abstr. 53(11), 1972. In German with French and English summ.] *WR 146: 23*

[Forschungsstelle Jagdkunde Wildschadenverhuetung, Bonn-Beuel, Germany.]

STRIPPED LAND & MISCELLANEOUS HABITATS

Spinage, C. A., and F. E. Guinness. TREE SURVIVAL IN THE ABSENCE OF ELEPHANTS IN THE AKAGERA NATIONAL PARK, RWANDA. *J. Appl. Ecol.* 8(3): 723-728, 2 figs. + 1 pl. Dec. 1971. *WR 146: 23*

[Coll. African Wildl. Manage., Box 3031, Moshi, Tanzania.] Summary: The absence of elephants in the Akagera National Park, Rwanda, is briefly discussed and the uniqueness of the area for the observation of other natural destructive factors operating against trees pointed out. Wind is shown to be a significant factor in the felling of mature trees whilst lightning causes damage to branches and crowns. Both of these factors operate to produce damage which in other areas may be erroneously attributed to elephant.

MAMMALS--GENERAL

Daniel, M., M. Mrciak, and B. Rosicky. LOCATION AND COMPOSITION OF NESTS BUILT BY SOME CENTRAL EUROPEAN INSECTIVORES AND RODENTS IN FOREST BIOTOPES. *Acta Fac. Rerum Nat. Univ. Comenianae Zool.* 16: 1-36. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 23*

Hyvärinen, Heikki, and Kalevi Heikura. EFFECTS OF AGE AND SEASONAL RHYTHM ON THE GROWTH PATTERNS OF SOME SMALL MAMMALS IN FINLAND AND IN KIRKENES, NORWAY. *J. Zool.* (London) 165(4): 545-556, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 23*

[Univ. Oulu, Oulu, Finland.] The intensity of growth of *Sorex araneus* and *Clethrionomys glareolus* in the Oulu district of Finland is studied as a function of age and seasonal rhythm, and compared with the results of growth-rate measurements of *S. araneus, C. rufocanus* and *C. rutilus* in Kirkenes, Norway. It is assumed that the postnatal development of the common shrew with its growth and regression phases is to some extent controlled by an endogenous seasonal rhythm. The growth of the voles is not as clearly controlled by these rhythms as that of the common shrew although the growth of the bank vole and northern red-backed vole is obviously considerably retarded in autumn and in winter.

Hyvärinen, H., A. Pelttari, and L. Saure. SEASONAL CHANGES IN THE HISTOLOGY AND ALKALINE PHOSPHATASE DISTRIBUTION OF THE SKIN OF THE COMMON SHREW AND OF THE BANK VOLE AS A FUNCTION OF HAIR CYCLE. *Aquilo Ser. Zool.* 12: 43-52, 10 figs. 1971. *WR 146: 23*

[Univ. Oulu, Oulu, Finland.]

considerations, Vinson L. Duvall; *Significance of forage quality as a tool in wildlife management*, W. O. Hanson and Justin G. Smith; *Forage quality and animal production: Some statistical problems*, Meredith J. Morris and Jacob L. Kovner; *Environmental influences on nutritional value of forage plants*, William A. Laycock and Donald A. Price; *Comparative nutritive values of forage species*, R. L. Covan, J. S. Jordan, J. L. Grimes, and J. G. Gill; *Effects of fertilization on quality of range forage*, Don A. Duncan and Lynn O. Hylton, Jr.; *Objectionable characteristics of range plants*, W. F. Mueggler; *Supplementing range forage*, Weldon O. Shepherd and Ralph H. Hughes; *Digestibility trials:* in vivo *techniques*, Henry L. Short; *Digestibility trials:* in vitro *techniques*, Henry A. Pearson; *Relating vegetation measurements to forage composition by animals*, S. Clark Martin; *Determining forage consumption by direct observation of domestic grazing animals*, Ardell J. Bjugstad, Hewlette S. Crawford, and Donald L. Neal; *Direct observations of tamed deer to measure their consumption of natural forage*, O. C. Wallmo and D. J. Neff; *Chemical indicator techniques for determining range forage consumption*, Brent Theurer; *Water intake by cattle as a measure of forage intake and quality*, D. N. Hyder; *Stomach content analyses: A comparison of the rumen vs. esophageal techniques*, Richard W. Rice; *Stomach content analyses: Collections from wild herbivores and birds*, Dean E. Medin; *Stomach content and fecal analysis: Methods of forage identification*, A. Lorin Ward; *Biological relations of rumen flora and fauna*, Julius G. Nagy; *Remote sensing: Review of principles and research in range and wildlife management*, David M. Carneggie; *Practical applications of remote sensing in range resources development and management*, Charles E. Poulton; *70-mm. aerial photography--a remote sensing tool for wild land research and management*, Jack N. Reppert and Richard S. Driscoll; *Animal census and other applications of remote sensing in wildlife management and habitat research in forested areas*, Forest W. Stearns; *Range ecology in the western United States*, Hudson G. Reynolds and Harold A. Paulsen, Jr.; *Current status of range ecology in the Southeast*, J. B. Hilmon; *An ecological classification proposal and its importance in land management*, F. C. Hall; *Use of ecological knowledge to improve big-game range*, Jack E. Schmautz; and *A model to incorporate soil survey and allotment analysis data into range management planning*, Jack E. Schmautz.

FORESTLAND--FORESTRY & ECOLOGY

Tomescu, N., V. G. Radu, P. Tudoran, I. Farcas, and V. Buz. INFLUENTA MICROCLIMEI ASUPRA MACROFAUNEI DIN FRUNZAR. [INFLUENCE OF MICROCLIMATE UPON LEAF-BEARING FOREST MACROFAUNA.] *Stud. Cercet. Biol. Ser. Zool.* 23(1): 53-59, illus. 1971. [From Biol. Abstr. 53(11), 1972. In Romanian with English summ.] *WR 146: 22*

[Univ. "Babes-Bolyai" Cluj, Cluj, Romania.]

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Gysel, Leslie W., John H. Cooley, and Forest Sterns. TIMBER AND WILDLIFE IMPLICATIONS OF PINE CONVERSION METHODS ON POOR OAK SITES. *J. For.* 70(5): 272-274, 2 figs. May 1972. *WR 146: 23*

[Mich. State Univ., East Lansing.] Abstract: Four techniques for establishing red pine were tried on poor sandy sites occupied by low-quality oak stands in the Manistee National Forest, Michigan. A harvest cut followed by summer burning or shearing with a K-G blade resulted in the best conditions for planting and early survival of the planted pine. However, the cost of slash removal and later release to obtain a fully stocked pine stand may not be justified on these sites. Planting before or after a harvest cut, without slash removal, while not as effective as burning for converting to pine, assures some survival and establishment of pine at minimum cost, increases short-term deer browse production, and provides a mixture of both summer and winter cover for a variety of wildlife species.

Schmidt, Wyman C., and Raymond C. Shearer. PONDEROSA PINE SEED--FOR ANIMALS OR TREES? *U.S. For. Serv. Res. Pap. INT*--112. ii + 14 p., 6 figs. Dec. 1971. *WR 146: 23*

[Forestry Sciences Lab., Missoula, Mont.] Abstract: Ponderosa pine *(Pinus ponderosa* Laws.*)* seed development and survival studies in northwestern Montana showed that small forest animals reduced the potential seed crop very little during the 2-year cone development period but they consumed an average of 24 out of 25 pine seeds that matured. Red squirrels *(Tamiasciurus hudsonicus richardsoni* Bachman*)* harvested an average of 66% of the mature cones, and after the seeds were dispersed deer mice *(Peromyscus maniculatus artemisiae* Rhoads*)*, chipmunks *(Eutamias amoenus luteiventris* Allen*)*, and birds consumed the equivalent of an additional 30%. Deer mouse populations apparently fluctuated in direct response to the size of the previous year's seed crop.

Ueckermann, E., and H. Scholz. DER EINFLUSS EINES ZUCKERLECKSTEINES AUF DEN SCHAELUMFANG. [THE INFLUENCE OF A SUGAR-LICK ON THE EXTENT OF BARK-PEELING.] *Z. Jagdwiss.* 17(1): 19-26. 1971. [From Biol. Abstr. 53(11), 1972. In German with French and English summ.] *WR 146: 23*

[Forschungsstelle Jagdkunde Wildschadenverhuetung, Bonn-Beuel, Germany.]

STRIPPED LAND & MISCELLANEOUS HABITATS

Spinage, C. A., and F. E. Guinness. TREE SURVIVAL IN THE ABSENCE OF ELEPHANTS IN THE AKAGERA NATIONAL PARK, RWANDA. *J. Appl. Ecol.* 8(3): 723-728, 2 figs. + 1 pl. Dec. 1971. *WR 146: 23*

[Coll. African Wildl. Manage., Box 3031, Moshi, Tanzania.] Summary: The absence of elephants in the Akagera National Park, Rwanda, is briefly discussed and the uniqueness of the area for the observation of other natural destructive factors operating against trees pointed out. Wind is shown to be a significant factor in the felling of mature trees whilst lightning causes damage to branches and crowns. Both of these factors operate to produce damage which in other areas may be erroneously attributed to elephant.

MAMMALS--GENERAL

Daniel, M., M. Mrciak, and B. Rosicky. LOCATION AND COMPOSITION OF NESTS BUILT BY SOME CENTRAL EUROPEAN INSECTIVORES AND RODENTS IN FOREST BIOTOPES. *Acta Fac. Rerum Nat. Univ. Comenianae Zool.* 16: 1-36. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 23*

Ryvärinen, Heikki, and Kalevi Heikura. EFFECTS OF AGE AND SEASONAL RHYTHM ON THE GROWTH PATTERNS OF SOME SMALL MAMMALS IN FINLAND AND IN KIRKENES, NORWAY. *J. Zool.* (London) 165(4): 545-556, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 23*

[Univ. Oulu, Oulu, Finland.] The intensity of growth of *Sorex araneus* and *Clethrionomys glareolus* in the Oulu district of Finland is studied as a function of age and seasonal rhythm, and compared with the results of growth-rate measurements of *S. araneus, C. rufocanus* and *C. rutilus* in Kirkenes, Norway. It is assumed that the postnatal development of the common shrew with its growth and regression phases is to some extent controlled by an endogenous seasonal rhythm. The growth of the voles is not as clearly controlled by these rhythms as that of the common shrew although the growth of the bank vole and northern red-backed vole is obviously considerably retarded in autumn and in winter.

Ryvärinen, H., A. Pelttari, and L. Saure. SEASONAL CHANGES IN THE HISTOLOGY AND ALKALINE PHOSPHATASE DISTRIBUTION OF THE SKIN OF THE COMMON SHREW AND OF THE BANK VOLE AS A FUNCTION OF HAIR CYCLE. *Aquilo Ser. Zool.* 12: 43-52, 10 figs. 1971. *WR 146: 23*

[Univ. Oulu, Oulu, Finland.]

Kistyakovskii, A. B. [CARNIVORA AND HUNTING.] *Vestn. Zool.* 5(3): 3-10. 1971. [From Biol. Abstr. 53(7), 1972. In Russian with English summ.] *WR 146: 24*
[Kiev State Univ., Kiev, USSR.]

Melnikov, V. K., and M. P. Tarasov. [A CONTRIBUTION TO THE ECOLOGY OF *OCHOTONA ALPINA* AND ITS SIGNIFICANCE IN THE FEEDING OF SABLE IN THE TAIGA OF THE UPPER LENA FLOW.] *Zool. Zh.* 50(4): 602-604. Apr. 1971. [From J. Mammal. 53 (1, suppl.), 1972. In Russian with English summ.] *WR 146: 24*

Naumov, N. P. [SPATIAL STRUCTURES OF THE SPECIES IN MAMMALS.] *Zool. Zh.* 50 (7): 965-980, illus. 1971. [From Biol. Abstr. 53(11), 1972. In Russian with English summ.] *WR 146: 24*
[Moscow State Univ., Moscow, USSR.]

Pasanen, Seppo. SEASONAL VARIATIONS IN INTERSCAPULAR BROWN FAT IN THREE SPECIES OF SMALL MAMMALS WINTERING IN AN ACTIVE STATE. *Aquilo Ser. Zool.* 11: 1-32, 14 figs. 1971. *WR 146: 24*
[Univ. Oulu, Oulu, Finland.] The seasonal and age variations in weight, fat and protein contents, catecholamine content, and lipase-esterase activity of interscapular brown fat (=IBF) in the common shrew *(Sorex araneus)*, the bank vole *(Clethrionomys glareolus)*, and the field vole *(Microtus agrestis)* are discussed. The central issue is the significance of IBF in the energy economy of small mammals wintering in an active state, and especially its contribution as a possible thermogenic organ.--From abstr.

Petter, F. NOUVELLES METHODES EN SYSTEMATIQUE DES MAMMIFERES, CYTOTAXONOMIE ET ELEVAGE. [NEW METHODS IN MAMMAL SYSTEMATICS, CYTOTAXONOMY, AND RAISING.] *Mammalia* 35(3): 351-357. 1971. [From Biol. Abstr. 53(11), 1972. In French with English summ.] *WR 146: 24*
[c/o Mammalia, 55, rue Buffon, Paris, France.]

Poduschka, Walter. EINBEZIEHUNG VON BAUEN DES IGELS *(ERINACEUS EUROPAEUS)* IN DIE WUEHLTAETIGKEIT VON WANDERRATTEN *(RATTUS NORVEGICUS)*. [USE OF THE BURROW OF THE EUROPEAN HEDGEHOG *(ERINACEUS EUROPAEUS)* IN THE DIGGING ACTIVITY OF THE NORWAY RAT *(RATTUS NORVEGICUS)*.] *Saeugetierkd. Mitt.* 19(2): 171-177, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 24*
[Rettichgasse 12, Vienna, Austria.]

Ratcliffe, P. R. THE OCCURRENCE OF VESTIGIAL TEETH IN BADGER *(MELES MELES)*, ROE DEER *(CAPREOLUS CAPREOLUS)*, AND FOX *(VULPES VULPES)* FROM THE COUNTY OF ARGYLL, SCOTLAND. *J. Zool.* 162(4): 521-525. Dec. 1970. [From J. Mammal. 53 (1, suppl.), 1972.] *WR 146: 24*

Tikhvinskaya, M. V., and P. K. Gorshkov. [THE TROPHIC RELATIONS OF FOXES AND *ARVICOLA TERRESTRIS* L. IN DIFFERENT LANDSCAPE REGIONS OF THE TATAR ASSR.] *Moskovskoe Prirody Biul. Biol.* 7(2): 33-43. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 24*

MAMMALS--TECHNIQUES

Corner, George W., and Erwin W. Pearson. A MINIATURE 30-MHz COLLAR TRANSMITTER FOR SMALL ANIMALS. *J. Wildl. Manage.* 36(2): 657-661, 1 fig. Apr. 1972. *WR 146: 24*
[Denver Wildl. Res. Cent., Denver, Colo.] Abstract: The construction of a miniaturized pulsing transmitter, modified from an earlier design, is described. The transmitter with its antenna collar has a volume of 0.7 cc, weighs 1.5 grams, and costs about $25.50, including labor. An instrument package for rats containing transmitter, collar, 350-milliampere-hour (mah) battery, and waterproof covering weighs 6.5 grams, has a volume of 1.4 cc, and normally transmits signals for 800 to 1,700 feet over rolling grasslands for 18 to 30 days. The package appears to cause no gross behavioral changes in instrumented rodents as small as 60 grams body weight.

DeGraaf, Richard M., and Joseph S. Larson. A TECHNIQUE FOR THE OBSERVATION OF SEX CHROMATIN IN HAIR ROOTS. *J. Mammal.* 53(2): 368-371, 1 fig. May 1972. *WR 146: 25*
[Univ. Mass., Amherst.]

Fadejev, V. V., and Yu. A. Andryanov. [METHODS OF UNIT ACTIVITY RECORDING IN FREEMOVING ANIMALS.] *Fiziol. Zh. SSSR* 57(8): 1217-1219. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 25*

Hadow, Harlo H. FREEZE-BRANDING: A PERMANENT MARKING TECHNIQUE FOR PIGMENTED MAMMALS. *J. Wildl. Manage.* 36(2): 645-649, 1 fig. Apr. 1972. *WR 146: 25*
[Veterans Administration Hospital, Denver, Colo.] Abstract: Freeze-branding was tested on fox squirrels *(Sciurus niger)*, Abert's squirrels *(S. aberti)*, male hooded rats *(Rattus norvegicus)*, and adult and neonatal house mice *(Mus musculus)*. A copper branding iron, cooled in a mixture of Dry Ice and alcohol, was applied to a shaved area on the mammal for sufficient time to kill the melanocytes but not the follicles of hair in contact with the iron. Such hair grows out white, resulting in a contrasting mark used to identify the mammal. Applications of 25 to 40, 20 to 35, and 20 to 35 seconds produced clear white brands on squirrels, rats, and mice, respectively. The optimal application time on neonatal mice increased from 4 to 7 seconds at 1 to 3 days of age to 10 to 15 seconds at 9 days of age. Chi-square tests on mortality and *t*-tests on weight gain revealed no differences between freeze-branded neonates and control littermates. Available evidence showed that freeze-branding is safe, reliable, and permanent on the species tested. Freeze-branding is the only technique now available that produces permanent marks for identification of small mammals at a distance, and with which animals can be marked as neonates and identified for life.

Holt, Gunnar, Jens J. Nygard, and Asbjørn Tevik. BRUK AV INJEKSJONSGEVAER TIL INNFANGING AV VILLE ELLER FORVILLEDE DYR. [THE USE OF INJECTION GUNS FOR CATCHING WILD OR WILD-RUNNING ANIMALS.] *Nor. Vet. Tidsskr.* 83(1): 3-10, illus. 1971. [From Biol. Abstr. 53(4), 1972. In Norwegian.] *WR 146: 25*
[Vet.-Inst., Oslo, Norway.] A gunpowder-powered gun (Cap-Chur gunpowder gun) with different sedatives (Sernylan, Etorphin, Rompun) was tested. With maximal ammunition load the maximal distance for the gun is 35 m, however, the shift between three available ammunition strengths is time consuming since the gun lacks a revolving mechanism for ammunition shift. The available arrows inject satisfactorily provided the impact and angle of incidence are correct. A considerable problem is caused by the necessity to track down the animals which come within suitable range to use the gun.

Klevezal', G. A., and S. E. Kleinenberg. AGE DETERMINATION OF MAMMALS FROM ANNUAL LAYERS IN TEETH AND BONES. *Published for the U.S. Department of the Interior and the National Science Foundation, Washington, D.C., by the Israel Program for Scientific Translations* (Jerusalem). TT 69-55033. ii + 128 p., 67 figs. 1969. Russian original by the Academy of Sciences of the USSR in 1967. [Translation available from the U.S. Department of Commerce, Clearinghouse for Federal Scientific and Technical Information, Springfield, Va.] *WR 146: 25*

Lieberman, Milton, and Diana Lieberman. A PELT-HOLDING APPARATUS FOR REFLECTANCE SPECTROPHOTOMETRY OF SMALL MAMMAL PELTS. *J. Mammal.* 53(2): 398-400, 1 fig. May 1972. *WR 146: 25*
[Univ. Calif., Irvine.]

MAMMALS--FAUNAS & MANUALS

Armstrong, David Michael. DISTRIBUTION OF MAMMALS OF COLORADO. *Ph.D. thesis, Univ. Kans.* 1254 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 25*

Barbu, Profira. SUR LA SYSTÉMATIQUE ET LA DISTRIBUTION DES PETITS MAMMIFÈRES DU DELTA DU DANUBE. [CONCERNING THE SYSTEMATICS AND DISTRIBUTION OF SMALL MAMMALS OF THE DANUBE DELTA.] *An. Univ. Bucur. Biol. Anim.* 18. p. 89-99, illus. 1969. [From Biol. Abstr. 53(8), 1972. In French.] *WR 146: 26*
[Univ. Bucharest, Bucharest, Romania.]

Eisenberg, John F., and Melvyn Lockhart. AN ECOLOGICAL RECONNAISSANCE OF WILPATTU NATIONAL PARK, CEYLON. *Smithsonian Contrib. Zool.* no. 101. 118 p., 76 figs. 1972. For sale at $1.50 by Supt. Documents, GPO, Washington, D.C. *WR 146: 26*
Major ungulate species and data concerning their abundance, seasons of reproduction, and feeding patterns are discussed. Composition of social groupings, seasonal habitat utilization trends, general behavior patterns, and population structure are discussed for the elephant *(Elephas maximus)*, water buffalo *(Bubalus bubalis)*, axis deer *(Axis axis)*, sambar *(Cervus unicolor)*, muntjac *(Muntiacus muntjac)*, wild swine *(Sus scrofa)*, and mouse deer *(Tragulus meminna)*. Certain aspects of the behavior of the major predators are also discussed, including the general biology of the golden jackal *(Canis aureus)* and the Ceylon leopard *(Panthera pardus)*. Social organizations of the ungulate species are compared with special attention given to the mode of antipredator behavior exhibited by ungulates. Habitat utilization trends and comments on competition and ecological separation are included together with an estimate of numerical abundance and biomass for the major ungulate species. Recommendations for management of the park system are discussed.--From abstr.

Garzon-Heydt, Jesus, and Santiago Javier Castroviego. NOTAS PRELIMINARES SOBRE LA DISTRIBUCION DE ALGUNOS MICROMAMIFEROS EN EL NORTE DE ESPAÑA. [PRELIMINARY NOTES ON THE DISTRIBUTION OF SOME SMALL MAMMALS NORTH OF SPAIN.] *Saugetierkd. Mitt.* 19(3): 217-222. 1971. [From Biol. Abstr. 53(11), 1972. In Spanish.] *WR 146: 26*
[Paseo Castellana 84, Inst. Zool., Madrid, Spain.] Excursions in 1968-70 in the Spanish mountain north of the 40° latitude resulted in a collection of a series of small mammals with a number of new records. The most important of these are: *Sorex minutus, Glis glis, Apodemus flavicollis, Arvicola terrestris, Microtus nivalis, Microtus agrestis* and *Clethrionomys glareolus*.

Grimwood, I. R. NOTES ON THE DISTRIBUTION AND STATUS OF SOME PERUVIAN MAMMALS, 1968. *Spec. Publ. Am. Comm. Int. Wild-Life Protection* 21. v + 86 p. 1969. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 26*

Marshall, J., and V. Nongngork. MAMMALS OF SAMUI ISLAND, THAILAND. *Nat. Hist. Bull. Siam Soc.* 23(4-5): 501-507 + 1 pl. Dec. 1970. [From J. Mammal. 53 (1, suppl.), 1972.] *WR 146: 26*

McEvoy, J. S., and T. H. Kirkpatrick. MAMMALS AND BIRDS OF BOORINGS SHIRE, QUEENSLAND. *Queensland J. Agric. Anim. Sci.* 28(2/3): 167-178, illus. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 26*
[Queensland Dep. Primary Ind., Warwick, Queensland, Australia.]

Pruitt, William O., Jr. TUNDRA ANIMALS: WHAT IS THEIR FUTURE? *Trans. Roy. Soc. Canada* 8: 373-385. 1970. [From Biol. Abstr. 53(12), 1972.] *WR 146: 26*
[Univ. Manitoba, Winnipeg, Manitoba, Canada.] A list of important arctic wildlife species and their seasonal habits are tabulated. The threat of their survival as a result of disturbance and destruction of wildlife habitat brought about by human oil explorations in the arctic region is discussed.

Stroganov, S. U. CARNIVOROUS MAMMALS OF SIBERIA. *Published for the Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Israel Program for Scientific Translations* (Jerusalem). TT 68-50349. ix + 522 p., 172 figs. 1969. Russian original by the Academy of Sciences of the USSR in 1962. [Translation available from the U.S. Department of Commerce, Clearinghouse for Federal Scientific and Technical Information, Springfield, Va.] *WR 146: 26*

Tachibana, S. [NOTES ON MAMMALS OBSERVED ON KAWAKITA-MACHI, MIYAGI PREF.] *J. Mammal. Soc. Japan* 5(3): 120-122. June 1971. [From J. Mammal. 53(1, suppl.), 1972. In Japanese.] *WR 146: 27*

Turner, Ronald William. MAMMALS OF THE BLACK HILLS OF SOUTH DAKOTA AND WYOMING. *Ph.D. thesis, Univ. Kans.* 402 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 27*
Six orders and 19 families, composed of 44 genera and 62 spp., comprise the Black Hills mammalian fauna.

Ziegler, Alan C. SUGGESTED VERNACULAR NAMES FOR NEW GUINEA RECENT LAND MAMMALS. *Occas. Pap. Bernice Pauahi Bishop Mus.* 24(9): 139-153. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 27*
[Bernice Pauahi Bishop Mus., Honolulu, Hawaii.]

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Barbehenn, K. R. COMMUNITY ORGANIZATION AND POPULATION REGULATION IN SMALL MAMMALS. *Bull. Ecol. Soc. Am.* 52(4): 51. Dec. 1971. [From J. Mammal. 53(1, suppl.), 1972. Abstract only.] *WR 146: 27*

Chernov, Yu. I. [THE NOTION "ANIMAL POPULATION" AND PRINCIPLES OF GEOZOOLOGICAL INVESTIGATIONS.] *Zh. Obshch. Biol.* 32(4): 425-438. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 27*

Chernov, Y. I. [SOME INDICES USED IN THE ANALYSIS OF THE STRUCTURE OF ANIMAL POPULATIONS OF THE LAND.] *Zool. Zh.* 50(7): 1079-1093, illus. 1971. [From Biol. Abstr. 53(5), 1972. In Russian with English summ.] *WR 146: 27*

Chitty, D. VARIATION AND POPULATION DENSITY. *Zool. Soc. London Symp.* 26: 327-333. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 27*

Choate, J. R., and R. E. Dubos. DISTRIBUTIONAL STATUS OF FOUR SPECIES OF CONNECTICUT MAMMALS. *Occas. Pap. Univ. Conn.* 2(3): 17-20. Dec. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 27*

Deshmukh, I. K., and M. J. Cotton. THE SMALL MAMMALS OF A SAND DUNE SYSTEM. *J. Zool.* 162(4): 525-527. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 27*

Eldridge, Joyce. SOME OBSERVATIONS ON THE DISPERSION OF SMALL MAMMALS IN HEDGEROWS. *J. Zool.* (London) 165(4): 530-534, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 27*

Kasatkin, V. I. [CHANGES IN DISTRIBUTION OF MAMMALS IN THE VOLGA DELTA WITH RESPECT TO THE REGULATION OF FLOW AND THE REGRESSION OF THE CASPIAN SEA.] *Zool. Zh.* 50(8): 1220-1227. Aug. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 27*

Metzgar, Lee H. THE MEASUREMENT OF HOME RANGE SHAPE. *J. Wildl. Manage.* 36 (2): 643-645, 1 fig. Apr. 1972. *WR 146: 27*
[Univ. Mont., Missoula.] Abstract: Location records such as those frequently obtained in small mammal studies were obtained from hypothetical home ranges of known circularity. These home ranges were distinctly oblong, and such data will usually be inadequate for measuring home range shape. The consequences of this in measuring home range size and the valid uses of such data are described.

Rogatko, I. V. [CONFERENCE ON POPULATION STRUCTURE OF SPECIES OF MAMMALS.] *Vestn. Zool.* (Kiev) 3: 93. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 27*

Simionescu, Viorica. [RESEARCHES REGARDING THE SMALL MAMMALIAN POPULATION DYNAMIC, IN SOME TYPES OF NATURAL BIOCENOSES.] *Comun. Zool.* (Bucharest) 1970: 289-304. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Romanian with English summ.] *WR 146: 28*

Stillmark, F. R. [SOME SPECIFIC FEATURES OF THE DISTRIBUTION AND ECOLOGY OF SMALL MAMMALS IN THE FORESTS OF THE LOWER AMUR REGION.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 7(2): 76-86. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 28*

Wallin, L. SPATIAL PATTERN OF TRAPPABILITY OF TWO POPULATIONS OF SMALL MAMMALS. *Oikos* 22(2): 221-224. 1971. [From J. Mammal. 53(1, suppl.), 1972. In (English) with Russian summ.] *WR 146: 28*

MAMMALS--PARASITES & DISEASES

Alexander, A. D., V. Flyger, Y. F. Herman, S. J. McConnell, N. Rothstein, and R. H. Yager. SURVEY OF WILD MAMMALS IN A CHESAPEAKE BAY AREA FOR SELECTED ZOONOSES. *J. Wildl. Dis.* 8(2): 119-126. Apr. 1972. *WR 146: 28*
[Nat. Resour. Inst., Univ. Md., College Park.] Studies were conducted on 104 striped skunks, 97 raccoons, 64 opossums, 10 woodchucks, 5 feral cats, and 1 muskrat. Animals were trapped on an undeveloped forest and swamp area in Eastern Maryland.--From abstr.

Baird, Craig R. DEVELOPMENT OF *CUTEREBRA RUFICRUS* (DIPTERA: CUTEREBRIDAE) IN SIX SPECIES OF RABBITS AND RODENTS WITH A MORPHOLOGICAL COMPARISON OF *C. RUFICRUS* AND *C. JELLISONI* THIRD INSTARS. *J. Med. Entomol.* 9(1): 81-85, 3 figs. 15 Mar. 1972. *WR 146: 28*
[Wash. State Univ., Pullman.]

Barbosa, F. S. NATURAL INFECTION WITH *SCHISTOSOMA MANSONI* IN SMALL MAMMALS TRAPPED IN THE COURSE OF A SCHISTOSOMIASIS CONTROL PROJECT IN BRAZIL. *J. Parasitol.* 58(2): 405-406. Apr. 1972. *WR 146: 28*
[Univ. Recife, Brazil.]

Buscher, H. N. A SURVEY OF PARASITES FOUND IN PERIPHERAL BLOOD SMEARS FROM SMALL MAMMALS COLLECTED IN WEST PAKISTAN. *Pakistan J. Sci.* 22(3-4): 166-169. July 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 28*

Dunsmore, J. D., R. T. Williams, and W. J. Price. A WINTER EPIZOOTIC OF MYXOMATOSIS IN SUBALPINE SOUTH-EASTERN AUSTRALIA. *Australian J. Zool.* 19(3): 275-286. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 28*

Emerson, K. C. RECORDS OF A COLLECTION OF MALLOPHAGA AND ANOPLURA FROM NICARAGUAN MAMMALS. *J. Kans. Entomol. Soc.* 44(3): 332-334. July 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 28*

Furowicz, Antoni, and Jerzy Szaflarski. WŚCIEKLIZNA KOTÓW I LISÓW W OKRESIE 1945-1970 W ASPEKCIE BADAŃ ZAKŁADU HIGIENY WETERYNARYJNEJ W KATOWICACH. [RABIES IN CAT AND FOX DURING THE PERIOD 1945-1970 IN THE LIGHT OF STUDIES CONDUCTED BY THE DEPARTMENT OF VETERINARY HYGIENE, KATOWICE.] *Biul. Służby Sanit. Epidemiol. Wojewodstwa Katowickiego* 15(1): 89-95. 1971. [From Biol. Abstr. 53(11), 1972. In Polish.] *WR 146: 28*
[Dep. Vet. Hyg., Katowice, Poland.] The epizootic process of rabies in forest animals seems to be spreading from the western and southern boundaries of Poland. It is most frequent in foxes, and in domestic cats contracting the disease from the foxes. Rabies viruses are highly adaptable to new hosts.

Herrer, A., S. R. Telford, Jr., and H. A. Christensen. ENZOOTIC CUTANEOUS LEISHMANIASIS IN EASTERN PANAMA: I. INVESTIGATION OF THE INFECTION AMONG FOREST MAMMALS. *Ann. Trop. Med. Parasitol.* 65(3): 349-358, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 29*
[Gorgas Mem. Lab., Panama City, Panama.]

Ilienko, A. I. [INFESTATION OF SMALL MAMMALS WITH GAMASID MITES IN THE REGIONS POLLUTED WITH Sr^{90}.] *Zool. Zh.* 50(2): 243-246. Feb. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 29*

Kemp, Graham E., Ottis R. Causey, Dorothy L. Moore, Akin Odelola, and Akinyele Fabiyi. MOKOLA VIRUS / FURTHER STUDIES ON IbAn 27377, A NEW RABIES-RELATED ETIOLOGIC AGENT OF ZOONOSIS IN NIGERIA. *Am. J. Trop. Med. Hyg.* 21(3): 356-359, 1 fig. May 1972. *WR 146: 29*
[Virus Res. Lab., Univ. Ibadan, Ibadan, Nigeria.] IbAn 27377 virus, a rabies-related agent which it is proposed to name Mokola virus, has been isolated six times in Ibadan, Nigeria. The original three strains and one other were recovered from non-nervous tissue of shrews, *Crocidura* sp. The remaining strains both came from children. In a serum survey, neutralizing antibody to the virus was detected in one of 57 sera from cattle, one of 30 from goats, one of 78 from swine, one of 23 from birds, and one of five from bats (*Eidolon helvum*); results were negative for 25 sera from other bats, 82 sera from man, 91 from shrews, and 13 from sheep.--From abstr.

Keymer, I. F. BLOOD PROTOZOA OF INSECTIVORES, BATS, AND PRIMATES IN CENTRAL AFRICA. *J. Zool.* (London) 163(4): 421-442. Apr. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 29*

Keymer, I. F. BLOOD PROTOZOA OF WILD CARNIVORES IN CENTRAL AFRICA. *J. Zool.* (London) 164(4): 513-528, illus. Aug. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 29*
[Zool. Soc. London, London, England.]

Kok, Nico J. J., Fritz S. Lukoschus, and Frank V. Clulow. THREE NEW ITCH MITES FROM CANADIAN SMALL MAMMALS (ACARINA: *P. SORERGATIDAE*). *Canadian J. Zool.* 49(9): 1239-1248. Sept. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 29*

Levine, Norman D., and Virginia Ivens. THE COCCIDIAN PARASITES (PROTOZOA, SPOROZOA) OF RUMINANTS. *Univ. Ill. Press, Ill. Biol. Monogr.* 44. 278 p., 291 figs., 65 pls. 1970. Price $8.50, paper. *WR 146: 29*
The known information on taxonomy, structure, life cycle, hosts, location in the host, pathogenicity, geographic distribution, and cross-transmission is summarized and reviewed for the 100 named species of coccidia of ruminants. These include 95 spp. of *Eimeria*, four of *Isospora*, and one of *Wenyonella*. On the basis of the 156 cross-infection experiments which have been carried out with 27 spp. of *Eimeria* from 13 donor host species, the authors conclude that the coccidia are extremely host-specific, at least within host genera. Wild ruminants are not a reservoir of coccidial infection for domestic animals.

Mullin, Steven W., Fredrick C. Colley, and G. Scott Stevens. COCCIDIA OF MALAYSIAN MAMMALS: NEW HOST RECORDS AND DESCRIPTIONS OF THREE NEW SPECIES OF *EIMERIA*. *J. Protozool.* 19(2): 260-263, 6 figs. May 1972. *WR 146: 29*
[Inst. Med. Res., Kuala Lumpur, Malaysia.]

Olsufjev, N. G., B. P. Dobrokhotov, T. N. Dunaeva, A. A. Pchelkina, I. V. Rodionova, V. P. Arseniev, and V. G. Petrov. [STATE OF NATURAL FOCI OF INFECTIONS IN PRESERVE TERRITORIES.] *Zool. Zh.* 49(11): 1697-1704. Nov. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 29*

Rausch, R. L., and S. H. Richards. OBSERVATIONS ON PARASITE-HOST RELATIONSHIPS OF *ECHINOCOCCUS MULTILOCULARIS* LEUCKART, 1863, IN NORTH DAKOTA. *Canadian J. Zool.* 49(10): 1317-1330. 1971. [From Biol. Abstr. 53(8), 1972. In English with French summ.] *WR 146: 30*

[Arctic Health Res. Cent., College, Alaska.] Red foxes, *Vulpes vulpes*, and small mammals were collected and examined during 1965-69, to investigate parasite-host relationships of *E. multilocularis* in N. Dakota. Comparative studies of this cestode were carried on concurrently through experimental infection of carnivores and rodents. In winter, red foxes in N. Dakota exhibited high rates of infection of comparatively low intensity. Deer mice, *Peromyscus maniculatus*, and voles, *Microtus pennsylvanicus*, were important intermediate hosts, but the larvae in deer mice produced fewer protoscolices.

Schmidt, Gerald D. *ONCICOLA SCHACHERI* SP. N., AND OTHER ACANTHOCEPHALA OF LEBANESE MAMMALS. *J. Parasitol.* 58(2): 279-281, 9 figs. Apr. 1972. *WR 146: 30*

[Univ. Northern Colo., Greeley.] Abstract: *Oncicola schacheri* sp. n. is described from foxes, *Vulpes vulpes*, from Lebanon. Other Lebanese species briefly discussed are *Nephridiorhynchus major* (Bremser, 1811), and *Tchadorhynchus quentini* Troncy, 1970.

Wallace, Gordon D., Leslie Marshall, and Mac Marshall. CATS, RATS, AND TOXOPLASMOSIS ON A SMALL PACIFIC ISLAND. *Am. J. Epidemiol.* 95: 475-482, 2 figs. May 1972. *WR 146: 30*

[Natl. Inst. Health, P.O. Box 1680, Honolulu, Hawaii.] Abstract: A seroepidemiologic study of toxoplasmosis was conducted on a small ecologically simple atoll in the Western Pacific. The atoll offered an opportunity to investigate *Toxoplasma* on three adjacent islets with differing populations of homoiothermic animals. One islet was inhabited by people, cats, rats, pigs, fruit bats, chickens, and wild birds. Only cats, rats, bats, and wild birds lived on one of the other two islets, and only rats, bats, and wild birds lived on the last. *Toxoplasma* antibody (determined by the dye test) in man and the lower animals, indicated that the parasite was epidemic or endemic on the two islets where cats were present, but not on the islet without cats. Observations on the eating habits of the people inhabiting the atoll suggested that the consumption of raw meat was not the usual source of human infection. Information obtained from the investigation suggested that cats may have played an essential role in the life history and transmission of *Toxoplasma* on the atoll.

Winkler, William G. FROM THE CENTER FOR DISEASE CONTROL / RABIES IN THE UNITED STATES, 1951-1970. *J. Infect. Dis.* 125(6): 674-675. June 1972. *WR 146: 30*

In 1951, rabies in dogs and cats accounted for 70.7% of reported rabies, and the disease in wildlife species for 17.3%. By 1970, dogs and cats accounted for only 9.7% of cases, while wildlife accounted for 78.0%. In 1961-1970, skunks were the most frequently reported rabid animal. In 1970, the 1,235 cases of rabies in skunks amounted to 38% of all cases of rabies in animals.

Woods, C. E., and O. R. Larson. NORTH DAKOTA FLEAS. III. ADDITIONAL RECORDS FROM MAMMALS. *Proc. N. Dak. Acad. Sci.* 24(2): 36-39. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 30*

SHREWS, MOLES, BATS

Beck, Albert J. A SURVEY OF BAT ECTOPARASITES IN WEST MALAYSIA. *J. Med. Entomol.* 8(2): 147-152. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 30*

[Univ. Calif., Berkeley.]

Bonaccorso, Frank J., and N. Smythe. PUNCH-MARKING BATS: AN ALTERNATIVE TO BANDING. *J. Mammal.* 53(2): 389-390, 1 fig. May 1972. *WR 146: 30*

[Univ. Fla., Gainesville.]

Brown, Larry N. UNIQUE FEATURES OF TUNNEL SYSTEMS OF THE EASTERN MOLE IN FLORIDA. *J. Mammal.* 53(2): 394-395. May 1972. *WR 146: 31*
[Univ. South Fla., Tampa.] *"Scalopus aquaticus."*

Brown, Randall E., Hugh H. Genoways, and J. Knox Jones, Jr. BACULA OF SOME NEOTROPICAL BATS. *Mammalia* 35(3): 456-464, illus. 1971. [From Biol. Abstr. 53 (11), 1972. In English with French summ.] *WR 146: 31*
[Oreg. State Univ., Corvallis.]

Correa-Giron, Pablo, Charles H. Calisher, and George M. Baer. EPIDEMIC STRAIN OF VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS FROM A VAMPIRE BAT CAPTURED IN OAXACA, MEXICO, 1970. *Science* (Washington) 175(4021): 546-547. 4 Feb. 1972. *WR 146: 31*
[Inst. Nacl. Invest. Pecuarias, Palo Alto, Mexico.] Abstract: A vampire bat, *Desmodus rotundus*, captured in Oaxaca, Mexico, in August 1970, was found to be infected with the epidemic strain of Venezuelan equine encephalomyelitis virus at the same time that an equine epizootic was occurring there.

Crespo, Raul Flores, Samuel B. Linhart, Richard J. Burns, and G. Clay Mitchell. FORAGING BEHAVIOR OF THE COMMON VAMPIRE BAT RELATED TO MOONLIGHT. *J. Mammal.* 53 (2): 366-368. May 1972. *WR 146: 31*

Davis, Russell, and Sterling E. Doster. WING REPAIR IN PALLID BATS. *J. Mammal.* 53(2): 377-378, 1 fig. May 1972. *WR 146: 31*
[Univ. Ariz., Tucson.]

Gaisler, J. REMARKS ON THE THERMO-PREFERENDUM OF PALEARCTIC BATS IN THEIR NATURAL HABITATS. *Bijdr. Dierkd.* 40(1): 33-35. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 31*

Gaisler, Jiří. VERGLEICHENDE STUDIE UEBER DAS HAARKLEID DER FLEDERTIERE (CHIROPTERA). [COMPARATIVE STUDY ON THE HAIR OF BATS (CHIROPTERA).] *Prirodoved. Pr. Ustavu Cesk. Akad. Brne* 5(8): 1-44, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 31*
[Univ. J. E. Purkyne, Brno, Czechoslovakia.] The hair was investigated in 16 spp. of Chiroptera, one family of Megachiroptera and five families of Microchiroptera.

Greenhall, Arthur M. LUCHA CONTRA LOS MURCIELAGOS VAMPIROS: ESTUDIO Y PROYECTO DE PROGRAMA PARA AMERICA LATINA. [VAMPIRE BAT CONTROL: STUDY AND PROJECTED PROGRAM FOR LATIN AMERICA.] *Bol. Ofic. Sanit. Panamer.* 71(3): 231-246. 1971. [From Biol. Abstr. 53(6), 1972. In Spanish with English, Portuguese, and French summ.] *WR 146: 31*
[Smithsonian Inst., Washington, D.C.]

Harman, Dan M., and Joseph A. Chapman. COMPARISON OF ABUNDANCE OF TWO SPECIES OF SHREWS IN FOUR MARYLAND HABITAT TYPES. *Chesapeake Sci.* 13(2): 149-150, 2 figs. June 1972. *WR 146: 31*
[Nat. Resour. Inst., Univ. Md., La Vale.]

Harrison, David L. A NOTE ON THE OCCURRENCE OF THE GIANT AFRICAN FREE-TAILED BAT, *TADARIDA AFRICANA* (DOBSON, 1876), IN TANZANIA, WITH SOME OBSERVATIONS ON THE CHARACTERS OF THE SPECIES. *Arnoldia* (Rhodesia) 5(19). 5 p., 1 fig. 30 Dec. 1971. *WR 146: 31*

Hill, J. E. BATS FROM THE SOLOMON ISLANDS. *J. Nat. Hist.* 5(5): 573-581, illus. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 31*
[British Mus. Nat. Hist., London, England.]

Hoffmann, Robert S. RELATIONSHIPS OF CERTAIN HOLARCTIC SHREWS, GENUS *SOREX*. *Z. Saeugetierkd.* 36(4): 193-200, illus. 1971. [From Biol. Abstr. 53(3), 1972. In English with German summ.] *WR 146: 31*
[Univ. Kans., Lawrence.]

Koenig, Claus. ZUR KENNTNIS DER BEIDEN LANGOHRFLEDERMAEUSE *PLECOTUS AURITUS* UND *PLECOTUS AUSTRIACUS*. [ON THE TWO LONG-EARED BATS *PLECOTUS AURITUS* AND *PLECOTUS AUSTRIACUS*.] *Jahresh. Ges. Naturkd. Wuerttemb.* 125: 279-283, illus. 1970. [From Biol. Abstr. 53(10), 1972. In German.] *WR 146: 32*
[Ludwigsburg, Germany.]

Kunz, Thomas H. ECOLOGY OF THE CAVE BAT, *MYOTIS VELIFER*, IN SOUTH-CENTRAL KANSAS AND NORTHWESTERN OKLAHOMA. *Ph.D. thesis, Univ. Kans.* 172 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 32*

Lankin, P. M., S. I. Takmovseva, and G. I. Nikitenko. [NEW DATA ON DISTRIBUTION OF *PARAECHINUS HYPOMELAS* IN THE EAST CASPIAN TERRITORY.] *Zool. Zh.* 49 (10): 1586-1588. Oct. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 32*

Lebrun, Marcel. DIX-SEPT ANNÉES D'OBSERVATIONS SUR LES CHEIROPTERES EN BRABANT. [SEVENTEEN YEARS OF OBSERVATION OF CHIROPTERA, IN BRABANT.] *Nat. Mosana* 23(3/4): 60-69. 1971. [From Biol. Abstr. 53(11), 1972. In French.] *WR 146: 32*
[Nat. Mosana, 311, route de Beaumont, Marchienneau-Pont, Belgium.]

Linhart, Samuel B., compiler. A PARTIAL BIBLIOGRAPHY OF THE VAMPIRE BATS *(DESMODUS, DIPHYLLA, DIAEMUS)* 1971. *Denver Wildl. Res. Cent.* and *U.S. Agency Int. Dev.* iv + 53 p. 1971. *WR 146: 32*
A list of 626 items indexed as to contents.

Long, Charles A. NOTES ON HABITAT PREFERENCE AND REPRODUCTION IN PIGMY SHREWS, *MICROSOREX*. *Canadian Field Nat.* 86(2): 155-160. Apr.-June 1972. *WR 146: 32*
[Wis. State Univ., Stevens Point.] Abstract: Records on habitats of pigmy shrews are reviewed, and new records from Wisconsin habitats and from specimen labels of the genus are presented. *Microsorex* may occur, seasonally at least, on dry soils, but usually fairly close to boreal mesic habitats. New reproductive records are presented, as is a second record of predation.

Medway, Lord. OBSERVATIONS OF SOCIAL AND REPRODUCTIVE BIOLOGY OF THE BENT-WINGED BAT *MINIOPTERUS AUSTRALIS* IN NORTHERN BORNEO. *J. Zool.* (London) 165(2): 261-273, illus. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 32*
[Great Glemham House, Saxmundham, Suffolk, England.]

Meylan, André. CHROMOSOMES DE SORICIDÉS DE CÔTE D'IVOIRE (MAMMALIA, INSECTIVORA). [CHROMOSOMES OF SHREWS OF THE IVORY COAST (MAMMALIA, INSECTIVORA).] *Rev. Suisse Zool.* 78: 603-613, 5 figs. Dec. 1971. In French with German and English summ. *WR 146: 32*
[Sta. Fed. Rech. Agro., Nyon, Switzerland.] "Six species of *Crocidura*."

Mollhagen, Tony. A KEY TO THE BATS OF TEXAS AND ADJACENT REGIONS WITH AN ANNOTATED LIST. *Tex. Speleol. Surv.* 3(4): 1-26, 16 figs. May 1970. *WR 146: 32*

Mollhagen, Tony. CHECKLIST OF BATS IN CAVES IN THE REGIONS OF THE SIERRA DE GUATEMALA AND SIERRA DE EL ABRA, NORTHEASTERN MEXICO. *Assoc. Mexican Cave Studies Bull.* 4. p. 19-22. 1971. *WR 146: 32*

Mueller, Paul, and Flavio Silva. BEITRAG ZUR CHIROPTERENFAUNA DER INSEL VON SÃO SEBASTIÃO (BRASILIEN 23°50'S/45°20'W). [CHIROPTERAN FAUNA OF THE ISLE OF SÃO SEBASTIÃO (BRAZIL 23°50'S/45°20'W).] *Z. Saeugetierkd.* 36(4): 225-228. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 32*
[Univ. Saarlandes, Saarbruecken, Germany.] Twelve species of Chiroptera occur on the Isle of São Sebastião.

Musayeb, M. A., and M. Y. Ganiyep. *KIMERIA MEHELYI*--NEW SPECIES COCCIDIUM FROM HORSESHOE BAT *(RHINOLOPHUS MEHELYI). Izv. Acad. Nauk Az. SSR Ser. Biol. Nauk* 2: 94-96. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 33*

Patten, Donald Richard. A REVIEW OF THE LARGE SPECIES OF *ARTIBEUS* (CHIROPTERA: PHYLLOSTOMATIDAE) FROM WESTERN SOUTH AMERICA. *Ph.D. thesis, Tex. A&M Univ.* 192 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 33*

Pennycuick, C. J. GLIDING FLIGHT OF A FRUIT BAT *ROUSETTUS AEGYPTIACUS*, OBSERVED IN A WIND TUNNEL. *J. Exp. Biol.* 55(3): 833-845. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 33*
[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.]

Peterson, R. L. THE SYSTEMATIC STATUS OF THE AFRICAN MOLOSSID BATS *TADARIDA BEMMELENI* AND *TADARIDA CISTURA. Canadian J. Zool.* 49(10): 1347-1354, illus. 1971. [From Biol. Abstr. 53(7), 1972. In English with French summ.] *WR 146: 33*
[Royal Ontario Mus., Toronto, Ontario, Canada.]

Reidinger, Russell Frederick, Jr. FACTORS INFLUENCING ARIZONA BAT POPULATION LEVELS. *Ph.D. thesis, Univ. Ariz.* 186 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 33*
Insecticide residue analysis was performed on 104 samples from 58 bats representing six species: *Antrozous pallidus, Eptesicus fuscus, Leptonycteris sanborni, Macrotus waterhousii, Pipistrellus hesperus,* and *Tadarida brasiliensis*. DDE, DDD, DDT, *o,p'*-DDT, dieldrin, toxaphene, Aroclor 1254 and Aroclor 1260 were seen in one or more samples. DDE was usually present in greatest concentration. These residue values are considerably higher than those for other mammals in Arizona collected in areas of similar insecticide usage, indicating a greater exposure of bats than other mammals to insecticides. Eleven of the 58 bats contained sufficiently high residues to consider acute toxic effects under periods of rapid lipid utilization, and five of these are believed to have died from insecticide poisoning. Most of the samples contained sufficiently high residues to consider sublethal effects. A mechanism of transfer of residues from adult to young via lactation is shown in *T. brasiliensis*, allowing effect on young before they are insect eaters.

Sahasrabudhe, J. D. ABNORMALITY IN THE BREEDING BEHAVIOUR OF THE INDIAN FRUIT BAT, *PTEROPUS GIGANTEUS GIGANTEUS* (BRUNNICH). *J. Bombay Nat. Hist. Soc.* 67(3): 550. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 33*

Sakhno, I. I. [*ELLOBIUS TALPINUS* PALL. IN THE VOROSHILOVGRAD REGION.] *Vestn. Zool.* 5(5): 65-69, illus. 1971. [From Biol. Abstr. 53(12), 1972. In Russian with English summ.] *WR 146: 33*
[Voroshilovgrad Pedagog. Inst., Voroshilovgrad, USSR.] The data are presented on the discovery of *E. talpinus* in the Voroshilovgrad region. The vegetation in the animal habitats, the burrows, building material for nests and food of *E. talpinus* are described. On the basis of morphological characters, the samples are attributed to the subgenus *E. talpinus tanaiticus*.

Schierer, A., J.-Cl. Mast, and R. Hess. CONTRIBUTION A L'ETUDE ECO-ETHOLOGIQUE DU GRAND MURIN *(MYOTIS MYOTIS).* [CONTRIBUTION TO THE ECO-ETHOLOGIC STUDY OF *MYOTIS MYOTIS.*] *Terre Vie* 26(1): 38-53, 6 figs. 1972. In French with German summ. *WR 146: 33*
[Univ. Louis-Pasteur, Strasbourg, France.]

Tupinier, Yves. LES CHAUVES-SOURIS: LEUR VOL ET LEURS DEPLACEMENTS. [BATS: THEIR FLIGHT AND THEIR VOYAGES.] *Bull. Mens. Soc. Linn. Lyon* 38(2): 50-56, illus. 1969. [From Biol. Abstr. 53(11), 1972. In French.] *WR 146: 33*
[Fac. Sci., Lyon, France.] The unique morphological adaptations which enable bats to fly are described. Bats are able to journey to and from their nesting

areas in search of food, in response to seasonal changes, and back to their home sites in case of dislocation due to storms or experimentation. There are several types of flight such as gliding and in place. The following species are used as examples: *Nyctalus leisleri, Barbastella barbastellus, Myotis emarginatus, Plecotus auritus,* and *Miniopterus schreibersi.*

Wertheim, Guta, and E. Nevo. HELMINTHS OF BIRDS AND MAMMALS FROM ISRAEL: III. HELMINTHS FROM CHROMOSOMAL FORMS OF THE MOLE-RAT, *SPALAX EHRENBERGI.* *J. Helminthol.* 45(2/3): 161-169. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 34*
[Hebrew Univ., Jerusalem, Israel.]

Whitaker, John O., Jr., and Russell E. Mumford. FOOD AND ECTOPARASITES OF INDIANA SHREWS. *J. Mammal.* 53(2): 329-335. May 1972. *WR 146: 34*
[Ind. State Univ., Terre Haute.] Abstract: A total of 339 shrews from Indiana was examined during the present study, including 159 *Blarina brevicauda,* 142 *Cryptotis parva,* 56 *Sorex cinereus,* and 16 *S. longirostris.* Mites of the species *Cryptoroxenus soricis, Androlaelaps fahrenholzi,* and *Protomyobia claparedei* were important parasites on *Blarina, Cryptotis,* and *S. cinereus. Blarinobia simplex* was taken from *Blarina,* whereas *B. cryptotis* was taken from *Cryptotis* and *Sorex cinereus.* Fleas commonest on *Blarina* were *Ctenopthalmus pseudagyrtes* and *Doratopsylla blarinae,* whereas the major flea of *Cryptotis* was *Corrodopsylla hamiltoni,* followed by *Ctenopthalmus pseudagyrtes.* Five specimens of the beetle, *Leptinus americanus,* were taken from *Blarina.* The most important foods of *Blarina,* listed in order of decreasing abundance were earthworms, slugs and snails, lepidopterous larvae, Gryllidae, and Chilopoda. Corresponding foods for *Cryptotis* were lepidopterous larvae, earthworms, spiders, internal organs of crickets and grasshoppers, and coleopterous larvae; for *Sorex cinereus,* they were lepidopterous larvae, coleopterous larvae, slugs and snails, spiders, and Gryllidae.

Winkelmann, John Roland. ADAPTATIONS FOR NECTAR-FEEDING IN GLOSSOPHAGINE BATS. *Ph.D. thesis, Univ. Mich.* 129 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 34*
This paper describes and interprets anatomical and behavioral features related to nectar-feeding in 29 spp. of bats of the neotropical subfamily Glossophaginae (Phyllostomatidae). For comparison, samples of 11 other phyllostomatid species of less specialized food habits are included.

Young, Allen M. FORAGING OF VAMPIRE BATS *(DESMODUS ROTUNDUS)* IN ATLANTIC WET LOWLAND COSTA RICA. *Rev. Biol. Trop.* 18(1/2): 73-88, illus. 1970. [From Biol. Abstr. 53(11), 1972. In English with Spanish summ.] *WR 146: 34*
[Lawrence Univ., Appleton, Wis.]

Žalman, Jiri. DIAGNOSTISCHE MERKMALE AN DEN SCHULTERBLAETTERN EINIGER FLEDERMAEUSE DER FAMILIE RHINOLOPHIDAE BELL, 1836 UND VESPERTILIONIDAE GRAY, 1821. [DIAGNOSTIC CHARACTERISTICS ON THE SCAPULAE OF SOME BATS OF THE FAMILY RHINOLOPHIDAE BELL, 1836 AND VESPERTILIONIDAE GRAY, 1821.] *Vestn. Cesk. Spol. Zool.* 35(4): 311-319, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German.] *WR 146: 34*
[Okresni Muz., Prague, Czechoslovakia.] Characteristics typical to the family or genus of 19 spp. of bats which include *Myotis, Eptesicus, Nyctalus, Pipistrellus, Barbastella, Vespertilio, Plecotus, Miniopterus,* and *Rhinolophus* were investigated.

Ziegler, Alan C. MILK DENTITION IN THE BROAD-FOOTED MOLE, *SCAPANUS LATIMANUS.* *J. Mammal.* 53(2): 354-355, 1 fig. May 1972. *WR 146: 34*
[Bishop Mus., Honolulu, Hawaii.]

Chapman, Joseph A., and John L. Paradiso. FIRST RECORDS OF THE NEW ENGLAND COTTONTAIL *(SYLVILAGUS TRANSITIONALIS)* FROM MARYLAND. *Chesapeake Sci.* 13(2): 148-149. June 1972. *WR 146: 35*
[Nat. Resour. Inst., Univ. Md., La Vale.]

Corr, P. V. THE ACCEPTABILITY AND EFFECTIVENESS OF PELLET BAITS FOR POISONING RABBITS. *Australian J. Exp. Agric. Anim. Husb.* 11(51): 407-414. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 35*
[Keith Turnbull Res. Sta., Frankston, Victoria, Australia.]

Correa, W. M., C. N. M. Correa, A. F. Gottschalk, and A. C. Rudge. GIARDIOSE EM COELHOS. [GIARDIOSIS IN RABBITS.] *Biologico* (São Paulo) 37(5): 130-132, illus. 1971. [From Biol. Abstr. 53(3), 1972. In Portuguese with English summ.] *WR 146: 35*
[Fac. Cienc. Med., Botucatu, Brazil.]

Dunaeva, T. N. [PECULIARITIES OF TULAREMIA IN BLUE HARES IN THE MIXED INFECTION.] *Zool. Zh.* 49(12): 1864-1868. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 35*

Dunsmore, J. D. INFLUENCE OF HOST HORMONES ON NEMATODE PARASITISM IN RABBITS, *ORYCTOLAGUS CUNICULUS* (L.). *Australian J. Zool.* 19(2): 121-128. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 35*
[CSIRO, Div. Wildl. Res., Lyneham, Australia.]

Flinders, Jerran Trueman. DIETS AND FEEDING HABITATS OF JACKRABBITS WITHIN A SHORTGRASS ECOSYSTEM. *Ph.D. thesis, Colo. State Univ.* 109 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 35*
"Lepus californicus and *L. townsendii."*

Hill, Edward Polk III. A STUDY OF THE COTTONTAIL RABBIT IN ALABAMA. *Ph.D. thesis, Auburn Univ.* 217 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 35*
A study of the cottontail rabbit *(Sylvilagus floridanus)* was conducted in Alabama from 1959 through 1971. Aspects of juvenile growth, aging techniques, litter size variation, breeding activity of adults and juveniles, effects of weather on reproduction, habitat management, population dynamics and predation were studied.

Irvin, A. D. A NOTE ON THE GASTRO-INTESTINAL PARASITES OF BRITISH HARES *(LEPUS EUROPAEUS* AND *L. TIMIDUS). J. Zool.* 162(4): 544-546. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 35*

Kawamichi, T. DAILY ACTIVITIES AND SOCIAL PATTERN OF TWO HIMALAYAN PIKAS, *OCHOTONA MACROTIS* AND *O. ROYLEI*, OBSERVED AT MT. EVEREST. *J. Fac. Sci. Hokkaido Univ., Ser. 6, Zool.* 17(4): 587-609. Apr. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 35*

Markham, O. D., and F. W. Whicker. BURROWING IN THE PIKA *(OCHOTONA PRINCEPS). J. Mammal.* 53(2): 387-389. May 1972. *WR 146: 35*
[U.S. Atomic Energy Comm., Idaho Falls, Idaho.]

Pelton, Michael R., and Ernest E. Provost. ONSET OF BREEDING AND BREEDING SYNCHRONY BY GEORGIA COTTONTAILS. *J. Wildl. Manage.* 36(2): 544-549, 3 figs. Apr. 1972. *WR 146: 35*
[Univ. Tenn., Knoxville.] Abstract: Conception dates were recorded from adult female cottontail rabbits *(Sylvilagus floridanus)* collected from the Piedmont and Coastal Plain physiographic regions of Georgia. The onset of breeding was correlated with late winter temperatures. Some scattered early breeding occurred among rabbits of the Coastal Plain region. However, the general onset of breeding was similar for both regions. The timing of second

periods of first conceptions was also apparently related to late winter temperatures. The onset of breeding and breeding synchrony were statewide in magnitude, thus, emphasizing the possible role of late winter temperatures (qualitative or quantitative, or both) as an influence on eastern cottontail population dynamics. Breeding synchrony was not apparent throughout the total breeding season.

Read, Ralph A. BROWSING PREFERENCE BY JACKRABBITS IN A PONDEROSA PINE PROVENANCE PLANTATION. *U.S. For. Serv. Res. Note RM*--186. 4 p., 1 fig. 1971. *WR 146: 36*

Abstract: Black-tailed jackrabbits, in a young ponderosa pine plantation of 79 provenances in central Nebraska, browsed the western sources more heavily than sources from east of the Continental Divide.

Somers, Lee Preston. DIALECTS IN SOUTHERN ROCKY MOUNTAIN PIKAS, *OCHOTONA PRINCEPS* (LAGOMORPHA). *Ph.D. thesis, Univ. Colo.* 39 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 36*

Stodart, Eleanor. COCCIDIOSIS IN WILD RABBITS, *ORYCTOLAGUS CUNICULUS* (L.) AT A SITE ON THE COASTAL PLAIN IN EASTERN AUSTRALIA. *Australian J. Zool.* 19(3): 287-292, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 36*
[28 James St., Curtin, Australia.]

Terrel, Ted L. THE SWAMP RABBIT *(SYLVILAGUS AQUATICUS)* IN INDIANA. *Am. Midl. Nat.* 87(2): 283-295, 1 fig. Apr. 1972. *WR 146: 36*
[Utah State Univ., Logan.] Swamp-rabbit distribution, habitat, population characters and behavioral traits were studied in Indiana in 1968-69.--From abstr.

Williams, R. T., and I. Parer. OBSERVATIONS ON THE DISPERSAL OF THE EUROPEAN RABBIT FLEA, *SPILOPSYLLUS CUNICULI* (DALE), THROUGH A NATURAL POPULATION OF WILD RABBITS, *ORYCTOLAGUS CUNICULUS* (L.). *Australian J. Zool.* 19(2): 129-140, illus. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 36*
[CSIRO, Div. Wildl. Res., Lyneham, Australia.]

Yalden, D. W. THE MOUNTAIN HARE *(LEPUS TIMIDUS* L.) IN THE PEAK DISTRICT. *Naturalist* (Leeds) 918: 81-92. Sept. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 36*

RODENTS--MISCELLANEOUS

Anderson, R. R., and K. N. Sinha. NUMBER OF MAMMARY GLANDS AND LITTER SIZE IN THE GOLDEN HAMSTER. *J. Mammal.* 53(2): 382-384. May 1972. *WR 146: 36*
[Univ. Mo., Columbia.]

Baccus, John Thomas. THE INFLUENCE OF A RETURN OF NATIVE GRASSLANDS UPON THE ECOLOGY AND DISTRIBUTION OF SMALL RODENTS IN BIG BEND NATIONAL PARK. *Ph.D. thesis, North Tex. State Univ.* 125 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 36*

Banks, E. M., R. J. Brooks, and R. Montgomerie. DETERMINATION OF HOME RANGE IN THE COLLARED LEMMING. *Bull. Ecol. Soc. Am.* 52(4): 30. Dec. 1971. [From J. Mammal. 53(1, suppl.), 1972. Abstract only.] *WR 146: 36*

Beck, Alan M., and Richard J. Vogl. THE EFFECTS OF SPRING BURNING ON RODENT POPULATIONS IN A BRUSH PRAIRIE SAVANNA. *J. Mammal.* 53(2): 336-346, 3 figs. May 1972. *WR 146: 36*
[Washington Univ., St. Louis, Mo.] Abstract: Small mammals were collected on six study areas, three of which had been burned (two, four, and 11 times) during the past 15 years and three of which had not been burned for 35 years. Each area was equally productive but the species composition varied, indicating a specific preference for either the brush prairie savanna (created and maintained by burning) or the oak forest (resulting from lack of fire). *Peromyscus*

leucopus noveboracensis and *Clethrionomys gapperi gapperi* were common in the unburned forest, and *Peromyscus maniculatus bairdii* and *Spermophilus tridecemlineatus tridecemlineatus* responded to the prairie created by burning. Burning of the forest did not significantly reduce the numbers of rodents present.

Bergner, Roland. STRATIFICATION STUDIES OF THE WHITE-FOOTED MOUSE, *PEROMYSCUS LEUCOPUS NOVEBORACENSIS* (FISCHER), (RODENTIA, CRICETIDAE) IN A DELAWARE DECIDUOUS WOODLOT. *M.S. thesis, Univ. Del.* 95 p. June 1969. *WR 146: 37*
[William Penn Mem. Mus. & Archives Bldg., Box 1026, Harrisburg, Pa.]

Berry, Dale L., and Robert J. Baker. CHROMOSOMES OF POCKET GOPHERS OF THE GENUS *PAPPOGEOMYS*, SUBGENUS *CRATOGEOMYS*. *J. Mammal.* 53(2): 303-309, 5 figs. May 1972. *WR 146: 37*
[Tex. Tech Univ., Lubbock.]

Beste, H. THE BURROW OF A RARE AUSTRALIAN RODENT. *Wildl. Australia* 8(2): 37. June 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 37*
"Notomys sp."

Blackwell, Trudie L., and Paul R. Ramsey. EXPLORATORY ACTIVITY AND LACK OF GENOTYPIC CORRELATES IN *PEROMYSCUS POLIONOTUS*. *J. Mammal.* 53(2): 401-403. May 1972. *WR 146: 37*
[Savannah River Ecol. Lab., Drawer E, Aiken, S.C.]

Boice, Robert. WATER ADDICTION IN CAPTIVE DESERT RODENTS. *J. Mammal.* 53(2): 395-398. May 1972. *WR 146: 37*
[Univ. Mo., Columbia.] *"Dipodomys ordii, Onychomys leucogaster, Peromyscus truei,* and *Cynomys ludovicianus."*

Bonaccorso, Frank J., and James H. Brown. HOUSE CONSTRUCTION OF THE DESERT WOODRAT, *NEOTOMA LEPIDA LEPIDA*. *J. Mammal.* 53(2): 283-288, 2 figs. May 1972. *WR 146: 37*
[Univ. Fla., Gainesville.] Abstract: Under confined and controlled conditions some desert woodrats, *Neotoma lepida lepida*, rapidly construct houses similar in size and form to those built in the wild. They utilize both natural materials (sticks, cactus, and pebbles) and artificial materials (plastic and metal jar tops). Preference for building materials differs among individuals. Once accustomed to building in captivity, woodrats build rapidly. A single individual may add as many as 359 pieces of material on a given night to its house and construct a complete house 40 centimeters high and 100 centimeters in diameter within 7 to 10 nights.

Brenner, F. J. LIGHT INFLUENCES ON TWO SPECIES OF HIBERNATING RODENTS. *Yearb. Am. Phil. Soc. 1969*: 298-299. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 37*

Brown, James H., Gerald A. Lieberman, and William F. Dengler. WOODRATS AND CHOLLA: DEPENDENCE OF A SMALL MAMMAL POPULATION ON THE DENSITY OF CACTI. *Ecology* 53(2): 310-313, 3 figs. Early Spring 1972. *WR 146: 37*
[Univ. Utah, Salt Lake City.] Most of the variation in density of woodrats *(Neotoma lepida)* was attributable to variation in the density of jumping cholla cactus *(Opuntia bigelovii)*. Woodrats also are abundant in some habitats where there is little or no cactus of any kind, so that their dependence on cholla is not obligate.--From abstr. Courtesy/ Paul A. Stewart.

Cameron, Guy N., and Dennis G. Rainey. HABITAT UTILIZATION BY *NEOTOMA LEPIDA* IN THE MOHAVE DESERT. *J. Mammal.* 53(2): 251-266, 7 figs. May 1972. *WR 146: 37*
[Univ. Houston, Houston, Tex.] Abstract: Habitat utilization by the desert woodrat, *Neotoma lepida*, was investigated in the Mohave Desert. *Neotoma lepida* occurs in three types of habitat in Joshua Tree National Monument--semidesert rock outcrop, desert wash, and cactus. Construction of houses and dietary composition of food caches and stomachs were analyzed for each habitat and were found

to be different. The desert woodrat has successfully increased its exploitation of these habitats by constructing houses from whatever materials are available in a particular habitat and also by utilizing a wide taxonomic and morphologic spectrum of food plants. Such methods of habitat utilization have, in those cases investigated, provided a degree of plasticity enabling successful coexistence with competing species.

Clark, Tim W. ABERRANT COLORATION IN *MICROTUS PENNSYLVANICUS* FROM GRAND TETON NATIONAL PARK. *Northwest Sci.* 45(4): 227-228, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 38*
[Univ. Wis., Madison.] A description is given of an abberant adult male *M. pennsylvanicus pullatus* with normal pelage except for the large white dorsal spots.

Clark, Tim W. ECOLOGY OF THE WESTERN JUMPING MOUSE IN GRAND TETON NATIONAL PARK, WYOMING. *Northwest Sci.* 45(4): 229-238, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 38*
[Univ. Wis., Madison.] Ecology, activity patterns, habitat affinities, reproduction, and food uses of the western jumping mouse *(Zapus princeps)* are discussed.

Cleveland, Arthur Gordon. STUDIES ON MORPHOLOGY AND BIOLOGY OF COTTON RATS *(SIGMODON HISPIDUS)* FROM NORTHERN MEXICO TO SOUTHERN NEBRASKA. *Ph.D. thesis, North Tex. State Univ.* 89 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32 (12), 1972.] *WR 146: 38*

Crouch, Glenn L. SUSCEPTIBILITY OF PONDEROSA, JEFFREY, AND LODGEPOLE PINES TO POCKET GOPHERS. *Northwest Sci.* 45(4): 252-256, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 38*
[Pacific NW For. Range Exp. Sta., Olympia, Wash.] The relative preferences of gophers *(Thomomys* spp.) to ponderosa pine *(Pinus ponderosa)*, Jeffrey pine *(P. jeffreyi)* or lodgepole pine *(P. contorta)* on one area where damage by gophers is known to occur are presented.

Csuti, B. A. DISTRIBUTION OF SOME SOUTHERN CALIFORNIA KANGAROO RATS. *Bull. S. Calif. Acad. Sci.* 70(1): 50-51. Apr. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 38*

Dapson, Richard W. AGE STRUCTURE OF SIX POPULATIONS OF OLD-FIELD MICE, *PEROMISCUS POLIONOTUS*. *Res. Popul. Ecol.* 13(2): 161-169, 1 fig. Mar. 1972. In English with Japanese summ. *WR 146: 38*
[Univ. Mich., Flint.] An accurate age-estimating technique, based on biochemical changes in eye lens protein, was used to study age structures of six populations of the old-field mouse, *Peromyscus polionotus*.--From summ.

Delany, M. J. VARIATION AND ECOLOGY OF ISLAND POPULATIONS OF THE LONG-TAILED FIELD MOUSE *(APODEMUS SYLVATICUS* [L.]). *Zool. Soc. London Symp.* 26: 283-295. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 38*

Delany, M. J. THE BIOLOGY OF SMALL RODENTS IN MAYANJA FOREST, UGANDA. *J. Zool.* (London) 165(1): 85-129, illus. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 38*
[Makerere Univ. Coll., Kampala, Uganda.]

Denton, J. Fred, and John M. Kinsella. *LYPEROSOMUM INTERMEDIUM* SP. N. (DIGENEA: DICROCOELIIDAE) FROM THE RICE RAT, *ORYZOMYS PALUSTRIS*, FROM SOUTHEASTERN SALT MARSHES. *J. Parasitol.* 58(2): 226-228, 3 figs. Apr. 1972. *WR 146: 38*
[Med. Coll. Ga., Augusta.] Abstract: *Lyperosomum intermedium* is described from the pancreas of the rice rat, *Oryzomys palustris*, collected from salt marshes in Florida and Georgia. It shows the closest relationship to *L. sinuosum* Travassos, 1917, from which it differs in body shape and proportions, size and location of the acetabulum, and the size and distribution of the vitellaria.

Dewsbury, Donald A., and Paul E. Jansen. COPULATORY BEHAVIOR OF SOUTHERN GRASSHOPPER MICE *(ONYCHOMYS TORRIDUS)*. *J. Mammal.* 53(2): 267-278, 3 figs. May 1972. *WR 146: 39*
[Univ. Fla., Gainesville.]

Drickamer, Lee C. EXPERIENCE AND SELECTION BEHAVIOR IN THE FOOD HABITS OF *PEROMYSCUS*: USE OF OLFACTION. *Behaviour* 41(3-4): 269-287. 1972. In English with German summ. *WR 146: 39*
[Mich. State Univ., East Lansing.] Feeding behavior in young and adult *Peromyscus maniculatus* and *P. leucopus* was studied by examining the extent to which food habit could be modified by prior experience and by describing the pattern of feeding behavior used by the mice in a three-choice situation. The principal conclusion was that *P. leucopus* exhibited more flexibility in feeding behavior than *P. m. bairdi*. Food habits and flexibility of feeding behavior were discussed in relation to the habitat distributions of these two species of mice.—From summ.

Dub, Miroslav. MOVEMENTS OF *MICROTUS ARVALIS* PALL. AND A METHOD OF ESTIMATING ITS NUMBERS. *Zool. Listy* 20(1): 1-14, 3 figs. 1971. In English. *WR 146: 39*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.] Abstract: The density of a meadow population of *Microtus arvalis* Pall. and the parametres of spatial activity of this rodent were studied in two live-trapping experiments. In the same site, the voles were then captured in a line of pitfall traps and then killed. Lastly, the possibility was examined of estimating their population density from the catch size obtained in the trap line and from the data on their movements. In July, the average distance moved was 12.9 and 6.5 m, for males and females, resp.; in October, 6.8 and 5.8 m, resp. The maximum distance moved between captures was 20.4 and 10.4 m, resp., in July, and 13.5 and 12.5 m, resp., in October. Both experiments tend to indicate that a 7 days' catch in a line corresponds to a population density in a rectangular surface whose length equals the length of the trap line and whose width equals the average maximum distance moved between captures (being 15.4 m for both sexes in July, and 13.0 m in October), plotted to both sides of the trap line.

Dub, Miroslav. REMARKS ON THE SEX RATIO OF *MICROTUS ARVALIS* (PALL.) CAUGHT IN PITFALL TRAPS. *Zool. Listy* 20(3): 207-213, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 39*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.] In a population sample of *M. arvalis* containing 1496 individuals captured in permanent lines of 300 pitfall traps placed in 3 different habitats during 1964, males predominated significantly ($X^2 = 19.318$; $P < 0.001$). During the year, males predominated significantly in spring and late autumn. From among the habitats investigated, the predominance of males was significant in the meadow only; it was insignificant in the forest and in the field. The high predominance of males in the total catch is due to males up to 15 g of body weight captured in autumn, apparently belonging to the migrating component of the population. It appears that in investigations of this kind the method of obtaining population samples is of essential importance.

Egoscue, Harold J. BREEDING THE LONG-TAILED POUCHED RAT, *BEAMYS HINDEI*, IN CAPTIVITY. *J. Mammal.* 53(2): 296-302, 2 figs. May 1972. *WR 146: 39*
[Natl. Zool. Park, Washington, D.C.] Abstract: Methods for rearing the long-tailed pouched rat, *Beamys hindei*, in captivity are presented. Antagonism that prevented establishing permanent monogamous pairs began while the rats were still juveniles. Females did not breed until they were at least 5 months old. Minimum gestation was 22 days and there was no postpartum oestrus. An average lactation lasted between 5 and 6 weeks. Growth and development of the young are described.

Ehrhart, Llewellyn McDowell. BEHAVIORAL STUDIES OF THREE SUBSPECIES OF THE OLD-FIELD MOUSE, *PEROMYSCUS POLIONOTUS*. *Ph.D. thesis, Cornell Univ.* 245 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 39*

Fairley, J. S. THE PRESENT DISTRIBUTION OF THE BANK VOLE *CLETHRIONOMIS GLAREOLUS* SCHREBER IN IRELAND. *Proc. Roy. Irish Acad. Sect. B* 71(13): 183-189. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 40*
[Univ. Coll., Galway, Ireland.]

Ferns, P. N. UNUSUAL OCCURRENCE IN THE STOMACH OF A FIELD VOLE, *MICROTUS AGRESTIS*. *J. Zool.* 162(4): 540-541. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 40*

Fleming, T. H. POPULATION ECOLOGY OF THREE SPECIES OF NEOTROPICAL RODENTS. *Misc. Publ. Mus. Zool., Univ. Mich.* 143: 1-77. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 40*

Forbes, James E., editor. PROCEEDINGS OF THE NEW YORK PINE MOUSE SYMPOSIUM. *U.S. Bur. Sport Fish. Wildl.* (Albany, N.Y.). 75 p. 25 Jan. 1972. *WR 146: 40*
The following papers are contained: *Apples and pine mice an orchardist's view*, Anthony Moriello; *The New York pine vole situation*, James E. Forbes; *Present methods for the control of pine mice*, Edward R. Ladd; *Problems in controlling pine mice in North Carolina*, Donald T. Harke; *Pine vole damage in Tennessee and Kentucky*, Kenneth M. Garner; *Problems in controlling pine mice in Ohio*, Richard O. Winters; *Status of pine mice in New Hampshire and Vermont and research needs*, Rene M. Bollengier; *Chlorophacinone and herbage as potentials for pine mouse damage control*, Frank Horsfall, Jr.; *Dynamics of the pine vole in a commercial orchard*, Lynn E. Walsh; *Aggressive behavior of the pine mouse*, George L. Kimball; *Vole populations in New York orchards*, R. S. Gourley and M. E. Richmond; and *Future of Federal pine vole research*, Richard N. Smith.

Genoways, Hugh Howard. SYSTEMATICS AND EVOLUTIONARY RELATIONSHIPS OF THE SPINY POCKET MICE OF THE GENUS *LIOMYS*. *Ph.D. thesis, Univ. Kans.* 667 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 40*

Getz, Lowell L. SOCIAL STRUCTURE AND AGGRESSIVE BEHAVIOR IN A POPULATION OF *MICROTUS PENNSYLVANICUS*. *J. Mammal.* 53(2): 310-317, 1 fig. May 1972. *WR 146: 40*
[Univ. Ill., Urbana.] Abstract: Data from multiple-capture live traps were analyzed to obtain indications of social structure within a meadow vole, *Microtus pennsylvanicus*, population in southern Wisconsin. The population was estimated to be in the first year of the decline after a peak density. More than 750 instances of multiple captures were obtained from August to December 1967. These captures were analyzed for indications of pair formation, social antagonism between sexes or age classes or both, and general level of aggressive behavior within the population. There was no indication of greater antagonism between adult males than between adult females or between males and females. There was no indication of significant antagonsim between adult and immature males. Survival of immature males was as great as, or greater than, that of immature females. These observations are consistent with the theory of little antagonism between males during the declining phase of the population cycle. There were significantly more captures of adult females with immature males than any other age-sex combination; the biological significance of this was not determined. There was no indication of lasting pair formation or of siblings remaining together once they had dispersed from their site of birth. There was no indication of formalized social structure within the meadow vole population; movement and association of individuals within the population appeared random.

Hadaway, Henry Clay. SEASONAL VARIATION IN THE WEIGHT AND COMPOSITION OF BROWN ADIPOSE TISSUE OF *PEROMYSCUS MANICULATUS* AND *MICROTUS CALIFORNICUS*. *Ph.D. thesis, Univ. Calif.* (Davis). 53 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 40*

Haines, Howard. CHARACTERISTICS OF A COTTON RAT *(SIGMODON HISPIDUS)* POPULATION CYCLE. *Tex. J. Sci.* 23(1): 3-27, illus. 1971. [From Biol. Abstr. 53 (6), 1972.] *WR 146: 41*

[Univ. Okla., Norman.] Cotton rat populations fluctuate in cycles of abundance. This study of one cycle of abundance began in Feb. 1958 and lasted three years. Two study populations were located near Austin, Texas; one a lowland habitat (Hunter's Bend Area), the other an upland habitat (Blair Area).

Happold, D. C. D. REPRODUCTION AND DEVELOPMENT OF THE SUDANESE JERBOA, *JACULUS JACULUS BUTLERI* (RODENTIA, DIPODIDAE). *J. Zool.* 162(4): 505-516. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 41*

Harling, John. A TECHNIQUE FOR PRECISELY TIMING CAPTURES OF *PEROMYSCUS MANICULATUS*. *Canadian J. Zool.* 49(9): 1275-1277, illus. 1971. [From Biol. Abstr. 53(4), 1972. In English with French summ.] *WR 146: 41*

[Simon Fraser Univ., Burnaby, British Columbia, Canada.] An electrical system is described which precisely times the captures of wild deermice in Longworth traps. This enables the immediate handling of trapped animals and permits more accurate determinations to be made of activity, body weights, and rate of fecal production.

Jarvis, J. U. M., and J. B. Sale. BURROWING AND BURROW PATTERNS OF EAST AFRICAN MOLE-RATS *TACHYORYCTES, HELIOPHOBIUS,* AND *HETEROCEPHALUS*. *J. Zool.* 163 (4): 451-480 + 4 pls. Apr. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 41*

Jericho, S. G. A NATIVE RODENT. *Wildl. Australia* 8(3): 84-85. Sept. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 41*

Joslin, James Kelvin. VISUAL CUES USED IN ORIENTATION BY WHITEFOOTED MICE, *PEROMYSCUS LEUCOPUS*: A LABORATORY STUDY. *Ph.D. thesis, Mich. State Univ.* 144 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 41*

Juelson, T. C. HOMING BEHAVIOR OF DEER MICE, *PEROMYSCUS MANICULATUS SONORIENSIS* (LECONTE), IN WESTERN UTAH. *Proc. Utah Acad. Sci. Arts Lett.* 47(1): 276-277. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 41*

Kang, Soo Won. [ECOLOGICAL STUDIES OF THE FIELD MOUSE.] *Korean J. Zool.* 14 (2): 57-74, illus. 1971. [From Biol. Abstr. 53(6), 1972. In Korean with English summ.] *WR 146: 41*

[Seoul Natl. Univ., Seoul, Korea.] *"Apodemus agrarius coreae."*

Kinney, James Lewis. ENVIRONMENTAL PHYSIOLOGY OF A PRIMITIVE RODENT. *Ph.D. thesis, Univ. Oreg.* 192 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 41*

Morphologically, the mountain beaver, *Aplodontia rufa*, has changed but little from the time of its first appearance in the fossil record some 60 to 70 million years ago and may be considered primitive since it still resembles its prosciurid ancestors.

Kisiel, Donald S. EFFECT OF TWO SIZES OF SHERMAN TRAPS ON SUCCESS IN TRAPPING *PEROMYSCUS* AND *REITHRODONTOMYS*. *Am. Midl. Nat.* 87(2): 551-553. Apr. 1972. *WR 146: 41*

[Colo. State Univ., Fort Collins.] Abstract: There was no significant difference in success of trapping *Peromyscus maniculatus, Peromyscus difficilis* and *Reithrodontomys megalotis* between large (3 x 3.5 x 10") and small (2 x 2.5 x 6.5") Sherman traps in a study area in Colorado.

Kisielewska, K. INTESTINAL HELMINTHS AS INDICATORS OF THE AGE STRUCTURE OF *MICROTUS ARVALIS* PALLAS 1778 POPULATION. *Bull. Acad. Polish Sci. Ser. Sci. Biol.* (Warsaw) 19(4): 275-282. 1971. [From J. Mammal. 53(1, suppl.), 1972. In (English) with Russian summ.] *WR 146: 41*

Koshkina, T. V. [INTERSPECIFIC COMPETITION IN RODENTS.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(1): 50-62. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 42*

Layne, James N. ACTIVITY RESPONSES OF TWO SPECIES OF *PEROMYSCUS* (RODENTIA, MURIDAE) TO VARYING LIGHT CYCLES. *Oecologia* (Berlin) 7(3): 223-241, illus. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 42*
[Archbold Biol. Sta., Lake Placid, Fla.] *"P. floridanus* and *P. gossypinus."*

Lerwill, C. J. OBSERVATIONS ON THE CLIMBING BEHAVIOUR OF THE STRIPED HAMSTER, *CRICETULUS BARABENSIS*. *J. Zool.* (London) 165(4): 520-525, illus. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 42*
[North-East Essex Tech. Coll., Colchester, Essex, England.]

Lewis, Anthony W. SEASONAL POPULATION CHANGES IN THE CACTUS MOUSE, *PEROMYSCUS EREMICUS*. *Southwest Nat.* 17(1): 85-93, 1 fig. May 1972. *WR 146: 42*
[Ariz. State Univ., Tempe.]

Litvin, V. Yu., and T. F. Proshina. [METHODS AND RESULT OF STUDYING THE CONTACTS OF *MICROTUS OECONOMUS* WITH CONTAMINATED PLACES IN THE NATURAL FOCUS OF LEPTOSPIROSES.] *Zool. Zh.* 50(4): 572-581. Apr. 1971. [From J. Mammal. 53 (1, suppl.), 1972. In Russian with English summ.] *WR 146: 42*

Massoia, Elio. CARACTERES Y RASGOS BIOECOLOGICOS DE *HOLOCHILUS BRASILIENSIS CHACARIUS* THOMAS ("RATA NUTRIA") DE LA PROVINCIA DE FORMOSA Y COMPARACIONES CON *HOLOCHILUS BRASILIENSIS VULPINUS* (BRANTS) (MAMMALIA-RODENTIA-CRICETIDAE). [CHARACTERS AND BIOECOLOGICAL DATA OF *HOLOCHILUS BRASILIENSIS CHACARIUS* THOMAS (MARSH RATS) IN THE FORMOSA PROVINCE AND COMPARISON WITH *HOLOCHILUS BRASILIENSIS VULPINUS* (BRANTS) (MAMMALIA-RODENTIA-CRICETIDAE).] *Rev. Invest. Agropecu. Ser. 1 Biol. Prod. Anim.* 8(1): 13-40, illus. 1971. [From Biol. Abstr. 53(6), 1972. In Spanish with English summ.] *WR 146: 42*
[Inst. Nac. Tecnol. Agropec., Buenos Aires, Argentina.] Twenty-two specimens of the genus *Holochilus* ("marsh rats") captured in Formosa Province (Argentina) are compared with 30 rodents of the genus obtained in Buenos Aires Province, Paraná Delta, Campana District, junction of Paraná Palmas River with Canal 6 (INTA).

McManus, John J., and William M. Zurich. GROWTH, PELAGE DEVELOPMENT AND MATURATIONAL MOLTS OF THE MONGOLIAN GERBIL, *MERIONES UNGUICULATUS*. *Am. Midl. Nat.* 87(2): 264-271, 4 figs. Apr. 1972. *WR 146: 42*
[Fairleigh Dickinson Univ., Madison, N.J.]

Meier, M. N. [CHARACTERISTICS OF REPRODUCTION AND POST-EMBRYONIC DEVELOPMENT OF *MICROTUS TRANSCASPICUS* SATUNIN, 1905 WITH REFERENCE TO ITS TAXONOMIC STATUS.] *Zool. Zh.* 50(6): 916-922, illus. 1971. [From Biol. Abstr. 53(7), 1972. In Russian with English summ.] *WR 146: 42*
[Zool. Inst., Acad. Sci. USSR, Leningrad, USSR.] *M. transcaspicus* and a closely related species *M. arvalis* were compared with respect to their reproduction and ontogenesis. Considerable differences were established between these forms beginning from the first day of life. The differences are expressed not only in external morphological features but also in time of opening eyes, cutting incisors, etc. All these indices may be used to determine the taxonomic status of *M. transcaspicus*.

Mele, Joseph A. TEMPERATURE REGULATION AND BIOENERGETICS OF THE MONGOLIAN GERBIL *MERIONES UNGUICULATUS*. *Am. Midl. Nat.* 87(2): 272-282, 2 figs. Apr. 1972. *WR 146: 42*
[Fairleigh Dickinson Univ., Madison, N.J.]

Meylan, A., and J. Morel. CAPTURE ET ÉLEVAGE D'*ARVICOLA TERRESTRIS* (L.): PREMIERS RÉSULTATS. [TRAPPING AND BREEDING OF *ARVICOLA TERRESTRIS* (L.): PRELIMINARY RESULTS.] *Publ. OEPP. Ser. A* no. 58. p. 115-127, 5 figs. 1970. In French with English summ. *WR 146: 43*

[Sta. Fed. Rech. Agro., Nyon, Switzerland.] Abstract: In Switzerland, the water vole, *Arvicola terrestris* (L.), is causing serious damage to some crops, mainly in orchards and grasslands. A study on the Northalpine fossorial form is currently being carried out. These rodents are easily captured; trapping and breeding methods are described. As examples, the authors give some results on reproduction and growth in captivity, trapping-out and population densities and structures.

Meylan, A., J. Morel, and J.-C. Praz. LE CAMPAGNOL TERRESTRE, *ARVICOLA TERRESTRIS* (L.), EN VALAIS (MAMMALIA, RODENTIA). [THE GROUND VOLE *ARVICOLA TERRESTRIS* (L.) IN VALAIS. (MAMMALIA, RODENTIA).] *Bull. Murithienne* 88: 69-82, 3 figs. 1971. In French. *WR 146: 43*

[Sta. Fed. Rech. Agro., Nyon, Switzerland.]

Milner, Joel S., and Arthur E. Harriman. NUTRITIONAL REQUIREMENTS OF THE KANGAROO RAT *(DIPODOMYS ORDII)* AS INDICATED BY DIETARY SELF-SELECTION. *J. Mammal.* 53(2): 347-353. May 1972. *WR 146: 43*

[Okla. State Univ., Stillwater.] Abstract: Nutritive and caloric needs of kangaroo rats *(Dipodomys ordii)* were investigated using a self-selection of diet technique. In contrast to findings that a majority of individuals of most species adjust successfully to self-selection schedules, only six of 16 experimental animals made adequate dietary adjustment. Patterns of nutritive intake of these six animals, however, were similar to intake patterns of laboratory rats and Mongolian gerbils *(Meriones unguiculatus)*. In a second experiment, three groups of kangaroo rats were presented a mash containing 2% salt, a mash containing 5% salt, and a commercial diet, respectively. The results showed that during a 30-day test period, the group on the 2% salt mash lost weight, whereas the other two groups increased in weight. The experiments suggest failure of kangaroo rats to adjust to a self-selection schedule might be partly due to an inability to consume casein or salts, or both.

Morris, Ralph D., and P. R. Grant. EXPERIMENTAL STUDIES OF COMPETITIVE INTERACTION IN A TWO-SPECIES SYSTEM. IV. *MICROTUS* AND *CLETHRIONOMYS* SPECIES IN A SINGLE ENCLOSURE. *J. Anim. Ecol.* 41(2): 275-290, 6 figs. June 1972. *WR 146: 43*

[Brock Univ., St. Catharines, Ontario, Canada.]

Murphy, M. R. NATURAL HISTORY OF THE SYRIAN GOLDEN HAMSTER--A RECONNAISSANCE EXPEDITION. *Bull. Ecol. Soc. Am.* 52(4): 42-43. Dec. 1971. [From J. Mammal. 53 (1, suppl.), 1972. Abstract only.] *WR 146: 43*

Niethammer, J., and H. Winking. DIE SPANISCHE FELDMAUS *(MICROTUS ARVALIS ASTURIANUS* MILLER, 1908*)*. [THE SPANISH FIELD MOUSE *(MICROTUS ARVALIS ASTURIANUS* MILLER, 1908*)*.] *Bonn. Zool. Beitr.* 22(3/4): 220-235, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 43*

[Univ. Bonn, Bonn, Germany.] Details of the distribution, ecology, reproduction and morphology of the Spanish common vole are given.

Nikitina, N. A. [RESULTS OF THE STUDY OF THE MIGRATIONS OF RODENTS FROM THE FAUNA OF THE USSR.] *Zool. Zh.* 50(3): 408-421. Mar. 1971. [From J. Mammal. 53 (1, suppl.), 1972. In Russian with English summ.] *WR 146: 43*

Okulova, N. M., V. A. Aristova, and T. V. Koshkina. [EFFECT OF POPULATION DENSITY UPON THE SIZE OF HOME RANGE OF SMALL RODENTS IN THE WEST SIBERIAN TAIGA.] *Zool. Zh.* 50(6): 908-915, illus. 1971. [From Biol. Abstr. 53(7), 1972. In Russian with English summ.] *WR 146: 43*

[Acad. Med. Sci. USSR, Moscow, USSR.] *"Clethrionomys rutilus, C. rufocanus* and *Microtus oeconomus."*

Pagels, John F., and Ronald G. Adleman. A NOTE ON THE COTTON RAT IN CENTRAL VIRGINIA. *Va. J. Sci.* 22(4): 195. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 44*

[Va. Commonwealth Univ., Richmond.] Range extension and description of a trapped female cotton rat *(Sigmodon hispidus virginianus)* 8.5 mi south of downtown Richmond, in Chesterfield County, Virginia, is presented.

Patton, James L., and J. Knox Jones, Jr. FIRST RECORDS OF *PEROGNATHUS BAILEYI* FROM SINALOA, MEXICO. *J. Mammal.* 53(2): 371-372. May 1972. *WR 146: 44*

[Univ. Calif., Berkeley.]

Prakash, Ishwar, R. K. Gupta, A. P. Jain, B. D. Rana, and B. K. Dutta. ECOLOGICAL EVALUATION OF RODENT POPULATIONS IN THE DESERT BIOME OF RAJASTHAN. *Mammalia* 35(3): 384-407, illus. 1971. [From Biol. Abstr. 53(11), 1972. In English with French summ.] *WR 146: 44*

[Cent. Arid Zone Res. Inst., Jodhpur, Rajasthan, India.] The gerbils, *Meriones hurrianae* and *Tatera indica indica* were the most abundant rodents in this desert biome. *Gerbillus gleadowi* was common on dune soils, *M. hurrianae* on desert soils, *Rattus c. cutchicus* in the rocky habitat, and *T. i. indica* and *R. meltada pallidior* in the village complex. The relative abundance, trap index and habitat preference of the rodents are discussed.

Prakash, Ishwar, G. C. Taneja, and K. G. Purohit. ECO-TOXICOLOGY AND CONTROL OF INDIAN DESERT GERBIL, *MERIONES HURRIANAE* (JERDON): VII. RELATIVE NUMBER IN RELATION TO ECOLOGICAL FACTORS. *J. Bombay Nat. Hist. Soc.* 68(1): 68-93. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 44*

[Cent. Arid Zone Res. Inst., Jodhpur, Rajasthan, India.]

Price, R. D., and K. C. Emerson. A REVISION OF THE GENUS *GEOMYDOECUS* (MALLOPHAGA: TRICHODECTIDAE) OF THE NEW WORLD POCKET GOPHERS (RODENTIA: GEOMYIDAE). *J. Med. Entomol.* 8(3): 228-257. Sept. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 44*

Roper, Richard Amory. THE APPLICATION OF BIOTELEMETRY TO FIELD STUDIES OF THE COTTON RAT. *Ph.D. thesis, Auburn Univ.* 107 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 44*

"Sigmodon hispidus."

Rotshild, E. V., V. F. Kondrashov, T. I. Tabunina, and G. B. Postnikov. [RODENTS AND FLEAS IN LANDSCAPES OF THE TERRITORY BETWEEN THE URAL AND EMBA RIVERS ENZOOTIC BY PLAGUE.] *Zool. Zh.* 49(10): 1548-1562. Oct. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 44*

Rust, James H., Jr., Daniel N. Harrison, John D. Marshall, Jr., and D. C. Cavanaugh. SUSCEPTIBILITY OF RODENTS TO ORAL PLAGUE INFECTION: A MECHANISM FOR THE PERSISTENCE OF PLAGUE IN INTER-EPIDEMIC PERIODS. *J. Wildl. Dis.* 8(2): 127-133. Apr. 1972. *WR 146: 44*

[Walter Reed Army Inst. Res., Washington, D.C.] Abstract: Oral infection of rodents with *Pasteurella pestis* has been demonstrated with both fully virulent and avirulent strains. Sustained rodent plague epizootics have been initiated and maintained in the absence of the classical flea vector. Transmission was due to cannibalism of the dying rodents by their healthy cagemates. Oral infection is considered to provide a plausible mechanism for the persistence of plague in an area where conditions are temporarily unsuitable for flea transmission.

Sarzhinsky, V. A., and G. S. Fadeev. [ON JOINT COLONIES OF MARMOTS AND GERBILS IN THE ILIYSK DEPRESSION.] *Fauna Ecol. Rodents* (Moscow) 9: 192-197. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 44*

Schaeffer, Helmut. DIE STEPPENBIRKENMAUS, *SICISTA SUBTILIS* (PALLAS, 1773), IN DER TSHECHOSLOWAKEI UND IHR KONTAKT MIT DER WALDBIRKENMAUS, *SICISTA BETULINA* (PALLAS, 1779). [THE SOUTHERN BIRCH MOUSE, *SICISTA SUBTILIS* (PALLAS, 1773), IN CZECHOSLOVAKIA AND THEIR CONTACT WITH THE NORTHERN BIRCH MOUSE, *SICISTA BETULINA* (PALLAS, 1779).] *Saugetierkd. Mitt.* 19(3): 223-231, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 45*
[Im Klaefberg 22, 5062 Hoffnungsthal, Germany.]

Schvetsov, Yu. G. [TO THE ECOLOGY OF THE TUNDRA-VOLE IN THE SELENGA RIVER DELTA.] *Fauna Ecol. Rodents* (Moscow) 9: 218-230. 1970. [From J. Mammal. 53 (1, suppl.), 1972. In Russian with English summ.] *WR 146: 45*

Shepard, Harold R. RODENT EFFECTS ON PINYON-JUNIPER DEER RANGE. *Colo. Div. Wildl. P.-R. Rep.* vi + 70 p., 15 figs. July 1972. *WR 146: 45*
Abstract: An eight-year study was conducted in Mesa Verde National Park to learn how rodents affect vegetation in a pinyon-juniper deer range. Small mammals, principally deer mice and pinyon mice, were exterminated from a 3-acre enclosure. A comparison of vegetation measurements inside the exclosure and control plot showed no rodent effects. Rodent extermination, transecting and other data-gathering activities appear to have affected vegetation more than did the rodents. Rodent population highs were estimated to be more than 25 times population lows, and deer mouse and pinyon mouse densities were estimated to have varied from 8.15 to 0.82 animals per acre. No browse plants were found girdled by rodents. Because they consume large quantities of insects, deer mice and pinyon mice are probably more beneficial than detrimental to a pinyon-juniper deer range.

Skar, Hans-Jorgen, Arne Hagen, and Eivind Osthye. THE BANK VOLE *(CLETHRIONOMYS GLAREOLUS* (SCHREBER, 1780)*)* IN SOUTH NORWEGIAN MOUNTAIN AREAS. *Norwegian J. Zool.* 19(2): 261-266. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 45*
[Univ. Oslo, Oslo, Norway.] Resident populations of the bank vole are reported from mid-alpine areas at Finse (60°36'N, 7°30'E), Hardangervidda, South Norway. Data were obtained by the marking-release method from 4 plots along a succession gradient, and from one at an abandoned summer dairy. Although earlier records state the treeline as the higher distribution limit, these and other data from this area confirm the assumption that there are resident populations of the bank vole in mid-alpine regions in South Norwegian mountain areas at present. Some reasons for the establishment are discussed, and it seems most reasonable that an expansion of the distribution area is due to a positive change in climate.

Smirin, Yu. M. [ON THE BIOLOGY OF SMALL WOOD RODENTS IN THE WINTER PERIOD.] *Fauna Ecol. Rodents* (Moscow) 9: 134-150. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 45*

Smirnov, E. N. [A NEW METHOD OF STUDYING THE FEEDING OF MURIDAE.] *Zool. Zh.* 50(5): 763-764. May 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 45*

Smirnov, V. N. [*CARDIOCRANIUS PARADOXUS* IN KAZAKHSTAN.] *Zool. Zh.* 50(8): 1266-1268. Aug. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 45*

Smith, Donald A., and S. Wayne Speller. THE DISTRIBUTION AND BEHAVIOR OF *PEROMYSCUS MANICULATUS GRACILIS* AND *PEROMYSCUS LEUCOPUS NOVEBORACENSIS* (RODENTIA: CRICETIDAE) IN A SOUTHEASTERN ONTARIO WOODLOT. *Canadian J. Zool.* 48(6): 1187-1199. Nov. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 45*

Sokur, I. T. [POPULATION STUDY OF HARMFUL RODENTS IN AGROBIOCOENOSES OF THE UKRAINE.] *Vestn. Zool.* 5(4): 3-10, illus. 1971. [From Biol. Abstr. 53(9), 1972. In Russian with English summ.] *WR 146: 45*
[Acad. Sci. Ukr. SSR, Kiev, USSR.] *"Microtus arvalis."*

Stebbins, L. L. SEASONAL VARIATIONS IN CIRCADIAN RHYTHMS OF DEER MICE IN NORTHWESTERN CANADA. *Arctic* (Quebec) 24(2): 124-131. June 1971. [From J. Mammal. 53(1, suppl.), 1972. In (English) with French and Russian summ.] *WR 146: 46*

Stock, A. Dean. SWIMMING ABILITY IN KANGAROO RATS. *Southwest. Nat.* 17(1): 98-99. May 1972. *WR 146: 46*
[Univ. Okla., Norman.] *"Dipodomys spp."*

Stoecker, Robert E. COMPETITIVE RELATIONS BETWEEN SYMPATRIC POPULATIONS OF VOLES (*MICROTUS MONTANUS* AND *M. PENNSYLVANICUS*). *J. Anim. Ecol.* 41(2): 311-329, 8 figs. June 1972. *WR 146: 46*
[Univ. Colo., Fort Collins.] In the field, competition for space among reproductive females was indicated by the non-overlapping nature of home ranges. These data also support the possibility of intra- as well as inter-specific territoriality. In 1966 and 1968 the relative abundance of *M. montanus* to *M. pennsylvanicus* was approximately 50:50; in 1969 it changed to 10:90. This asynchronous trend in cycling was accompanied by a shift in habitat occurrence: *M. montanus* no longer utilized the wetter sites, and *M. pennsylvanicus* expanded their range to include the drier sites; *M. pennsylvanicus* probably obtained a competitive advantage arising through their numerical superiority. Removal of one species and the subsequent influx of the other suggests that inter-specific behavioral interactions are important in maintaining local habitat segregation.--From summ.

Stout, Jack, Allen L. Farris, and Vernon L. Wright. SMALL MAMMAL POPULATION OF AN AREA IN NORTHERN IDAHO SEVERELY BURNED IN 1967. *Northwest Sci.* 45(4): 219-226. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 46*
[Wash. State Univ., Pullman.] An evaluation of the relative abundance and diversity of small mammals (rodents), their impact on the vegetation and the determination of overt signs of social stress are presented.

Surkov, V. S., and E. W. Nadtochii. [A CONTRIBUTION TO THE HELMINTH FAUNA IN MURIDAE OF THE SAKHALIN ISLAND.] *Zool. Zh.* 50(2): 278-279. Feb. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 46*

Sviridenko, P. A. [*APODEMUS AGRARIUS* PALL. UNDER CONDITIONS OF THE UKRAINE: I. REPRODUCTION.] *Vestn. Zool.* 5(3): 11-16. 1971. [From Biol. Abstr. 53(7), 1972. In Russian with English summ.] *WR 146: 46*
[Inst. Zool., Acad. Sci. Ukr. SSR, Kiev, USSR.]

Tanaka, Ryo. INVESTIGATION INTO THE EDGE EFFECT BY USE OF CAPTURE-RECAPTURE DATA IN A VOLE POPULATION. *Res. Popul. Ecol.* (Kyoto) 13(2): 127-151, 8 figs. Mar. 1972. In English with Japanese summ. *WR 146: 46*
[Kochi Women's Univ., Kochi, Japan.] A substantial explanation of the edge effect has been attempted by use of capture-recapture data for a vole population (*Microtus montebelli*), gathered in two plots of 100 x 100 m or less during 12 days, checked twice daily, in August 1970; the sample was quite sufficient for the aim.--From summ.

Taylor, J. Mary, and B. Elizabeth Horner. OBSERVATIONS ON THE REPRODUCTIVE BIOLOGY OF *PSEUDOMYS* (RODENTIA: MURIDAE). *J. Mammal.* 53(2): 318-328, 3 figs. May 1972. *WR 146: 46*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Abstract: Certain anatomical and histological features of the reproductive system are described for the first time for three species of *Pseudomys* from mainland Australia--*P. shortridgei*, *P. australis*, and *P. gracilicaudatus*. All three species possess Cowper's glands, seminal vesicles, and prostates. Preputial glands occur in *P. australis* and *P. gracilicaudatus*. In *P. gracilicaudatus*, litter size, determined from corpora lutea counts, ranges from two to four, and ovulation appears to be suppressed during pregnancy. It is not known if any of the species experience a postpartum estrus, nor is the length of gestation known. Brief habitat descriptions are provided for each of the three species under consideration.

Tenora, Fr., and F. Mészáros. NEMATODES OF THE GENUS *HELIGMOSOMUN* RAILLET ET HENRY, 1909, SENSU DURETTE-DESSET, 1968, PARASITIZING RODENTS IN EUROPE. *Acta Zool. Acad. Sci. Hungaricae* 17(3-4): 397-407. 1971. [From J. Mammal. 53 (1, suppl.), 1972.] *WR 146: 47*

Thiessen, D. D., G. Lindzey, S. L. Blum, and P. Wallace. SOCIAL INTERACTIONS AND SCENT MARKING IN THE MONGOLIAN GERBIL *(MERIONES UNGUICULATUS). Anim. Behav.* 19(3): 505-513, 1 fig. on 1 pl. Aug. 1971. *WR 146: 47*

[Univ. Tex., Austin.] Abstract: Scent marking is common for many species, and affords olfactory cues for a variety of social reactions. The Mongolian gerbil *(Meriones unguiculatus)* marks objects with a ventral sebaceous scent gland. In both paired and triplet male encounters, animals marking most frequently generally become dominant. Grouping, however, can have the additional effect of depressing marking and morphological indices of androgen activity. In related studies it was demonstrated that males are attracted to the sebum coming from the scent glands of other males but not to sebum from females. Females show no obvious reference. These studies add support to the notion that gerbil marking has territorial significance and serves recognition functions.

Thiessen, D. D., P. I. Yahr, and G. Lindzey. VENTRAL AND CHIN GLAND MARKING IN THE MONGOLIAN GERBIL *(MERIONES UNGUICULATUS). Forma Functio* 4(2): 171-175. 1971. [From J. Mammal. 53(1, suppl.), 1972. In (English) with German and French summ.] *WR 146: 47*

Tuszynski, Richard C., and John O. Whitaker, Jr. EXTERNAL PARASITES OF POCKET GOPHERS, *GEOMYS BURSARIUS*, FROM INDIANA. *Am. Midl. Nat.* 87(2): 545-548. Apr. 1972. *WR 146: 47*

[Purdue Univ., Lafayette, Ind.]

Ulmanen, Ismo, and Arvo Myllymaki. SPECIES COMPOSITION AND NUMBERS OF FLEAS (SIPHONAPTERA) IN A LOCAL POPULATION OF THE FIELD VOLE, *MICROTUS AGRESTIS* (L.). *Ann. Zool. Fenn.* 8(3): 374-384, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 47*

[Univ. Helsinki, Helsinki, Finland.]

Vestal, Bedford M., and James L. Hill. PATTERN VISION OF DEERMICE *(PEROMYSCUS)* UNDER RED LIGHT. *J. Mammal.* 53(2): 374-376. May 1972. *WR 146: 47*

[Univ. Mo.-St. Louis, St. Louis.]

Vodozhyninov, N. N. [ON THE SYSTEMATICS AND ECOLOGY OF THE INDIAN PEST RAT *(NESOKIA INDICA* GRAY) IN SOUTHERN UZBEKISTAN.] *Uzb. Biol. Zh.* 3: 46-49. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 47*

Walhovd, Helge. THE ACTIVITY OF A PAIR OF COMMON DORMICE *MUSCARDINUS AVELLANARIUS* IN CONDITIONS OF CAPTIVITY. *Oikos* 22(3): 358-365, illus. 1971. [From Biol. Abstr. 53(11), 1972. In English with Russian summ.] *WR 146: 47*

[Univ. Aarhus, Aarhus, Denmark.]

Whitaker, J. O., Jr., and D. Adalis. TREMATODES AND CESTODES FROM THE DIGESTIVE TRACTS OF *SYNAPTOMYS COOPERI* AND THREE SPECIES OF *MICROTUS* FROM INDIANA. *Proc. Ind. Acad. Sci. 1970*, 80: 489-494. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 47*

Witte, Guenter R. JUNGENTRANSPORT IN DEN BACKENTASCHEN BEIM SYRISCHEN GOLDHAMSTER *(MESOCRICETUS AURATUS* WATERHOUSE, 1839*).* [CHEEK POUCH CARRYING OF THE GOLDEN HAMSTER *(MESOCRICETUS AURATUS* WATERHOUSE, 1839*).*] *Z. Saugetierkd.* 36(4): 216-219, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 47*

[Am Stirnband 10, Hagen, Germany.] Description of a hitherto scarcely noticed behavior pattern which is part of the parental care behavior of the golden hamster. It is called "cheek pouch carrying" which is a normal part of its

behavior pattern. Up to 12 young can be carried at the same time for at least 22 min. Young can be carried in the cheek pouches, when they are not yet three days old. This behavior pattern is biologically significant and helps in the survival of the species.

Zejda, Jan. DIFFERENTIAL GROWTH OF THREE COHORTS OF THE BANK VOLE, *CLETHRIONOMYS GLAREOLUS* SCHREB. 1780. *Zool. Listy* 20(3): 229-245, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 48*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Zippelius, Hanna-Maria. BRUTPFLEGEVERHALTEN BEI DER GELBHALSMAUS *(APODEMUS FLAVICOLLIS)*. [BEHAVIOR IN CARE OF YOUNG BY THE YELLOW-NECKED MOUSE *(APODEMUS FLAVICOLLIS)*.] *Bonn. Zool. Beitr.* 22(1/2): 189-200, illus. 1971. [From Biol. Abstr. 53(9), 1972. In German.] *WR 146: 48*
[Zingsheimer Tal 9, Kommern, Germany.]

RATTUS & MUS

Clark, D. E. PARASITES OF *MUS MUSCULUS* FROM AN INHABITED BUILDING IN TERRE HAUTE, VIGO COUNTY, INDIANA. *Proc. Ind. Acad. Sci. 1970*, 80: 495-500. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 48*

Field, Ronald J. URBAN NORWAY RAT CONTROL / AN ECOLOGICAL METHOD. *Pest Control* 40(4): 20, 22, 24, 26. Apr. 1972. *WR 146: 48*
[Howard Univ., Washington, D.C.] Includes an outline of what the author feels should be a theoretically sound and practical approach to urban rat control using only the currently available materials.

Gwynn, G. Wayne. EFFECTS OF A CHEMOSTERILANT ON FECUNDITY OF WILD NORWAY RATS. *J. Wildl. Manage.* 36(2): 550-556, 1 fig. Apr. 1972. *WR 146: 48*
[Univ. Mich., Ann Arbor.] Abstract: Wild Norway rats *(Rattus norvegicus)* living in large outdoor pens readily accepted a water supply containing the estrogen antagonist 1-[2-[p[α-(p-methoxyphenyl)-β-nitrostyryl]phenoxy]ethyl] pyrrolidine monocitrate (CN-55,945-27, Parke, Davis and Company), even though untreated water was also freely available. Three concentrations of the drug, providing an estimated consumption of 22, 62, and 111 µg per 300-gram rat per day, were used. At the termination of the 106-day study, the total rat population in the two medium- and two high-dose pens had declined from the original 16 rats to 13 and 10 rats, respectively, whereas the population in the two low-dose pens increased from 16 to a total of 51 animals in both pens. The total population in the two untreated pens grew from 16 to 87 animals in both pens.

Knipling, E. F., and J. U. McGuire. POTENTIAL ROLE OF STERILIZATION FOR SUPPRESSING RAT POPULATIONS / A THEORETICAL APPRAISAL. *U.S. Dep. Agric. Tech. Bull.* no. 1455. i + 27 p., 4 figs. June 1972. For sale by Supt. Documents, GPO, Washington, D.C., at 20¢. *WR 146: 48*
Contents: Procedure in making the appraisal, Comparison of suppression mechanisms in two control procedures, Suppression procedures to be analyzed, Parameters and development of models for populations subjected to conventional control procedures, Effect on populations subjected to conventional control, Parameters and development of models for populations subjected to sterilization, Effect on populations subjected to sterilization, Calculated impact of sterilizing males or females only, Discussion and conclusions, and Literature cited.

Kobayashi, Yuzuru, Tomohiro Kusaba, and Ryosuke Ueki. ISOLATION OF *LEPTOSPIRA JAVANICA* FROM RATS ON ISHIGAKI ISLAND. *Am. J. Trop. Med. Hyg.* 21(3): 342-344. May 1972. *WR 146: 48*
[Kyushu Univ., Fukuoka, Japan.] Abstract: Five isolations of *Leptospira* were made from *Rattus rattus* on Ishigaki Island of the Yaeyama Islands in the Ryukyus in 1967 and 1968. By cross-agglutination tests and cross-absorption tests, all were identified as *Leptospira javanica*, Rat Batavia 46 strain. The organism showed little pathogenicity for guinea pigs.

McKinney, Ted D. ESTROUS CYCLE IN HOUSE MICE: EFFECTS OF GROUPING, PREPUTIAL GLAND ODORS, AND HANDLING. *J. Mammal.* 53(2): 391-393. May 1972. *WR 146: 49*
[Okla. State Univ., Stillwater.] *"Mus musculus."*

Norman, F. I. FOOD PREFERENCES OF AN INSULAR POPULATION OF *RATTUS RATTUS*. *J. Zool.* 162(4): 493-504. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 49*

Yabe, T., K. Moriya, and F. Harada. [ECOLOGICAL STUDIES ON HOUSE RATS AND MICE 2. FLUCTUATIONS IN BODY WEIGHT AND EMBRYO SIZE OF THE NORWAY RAT DUE TO THE ENVIRONMENTS.] *Japanese J. Sanit. Zool.* 22(1): 49-55. May 1971. [From J. Mammal. 53(1, suppl.), 1972. In Japanese with English summ.] *WR 146: 49*

SCIURIDS

Adams, Lowell, and Joseph A. Finn. BEHAVIORAL INDICES OF ADRENAL GLAND WEIGHT IN THE CALIFORNIA GROUND SQUIRREL. *Ecology* 53(1): 173-176, 2 figs. Winter 1972. *WR 146: 49*
[Univ. Calif., San Francisco.] The behavioral characteristic "time-in-sight" promises to be a reliable, objective index to the weight of the adrenal gland in California ground squirrels. Time-in-sight is defined as the percentage of time during scheduled observation periods that a squirrel is actually in view. The more an animal is available to be seen, the smaller its adrenal, and vice versa (correlation coefficient r=-0.835). Another promising index of gland weight is based on the experienced observer's subjective evaluation of the squirrel's behavior.--From abstr. Courtesy/ Paul A. Stewart.

Adams, Lowell, and Major Eugene G. Strahler. SERUM ELECTROPHORETIC PATTERNS IN THE CALIFORNIA GROUND SQUIRREL. *J. Wildl. Dis.* 8(2): 134-138, 2 figs. Apr. 1972. *WR 146: 49*
[Univ. Calif., San Francisco.] *"Spermophilus beecheyi."*

Albert, Thomas Frank. STUDIES ON LOW BODY TEMPERATURE STATES IN HIBERNATORS: THE WOODCHUCK, *MARMOTA MONAX*, AND THE GROUND SQUIRREL, *CITELLUS TRIDECEMLINEATUS*. *Ph.D. thesis, Georgetown Univ.* 143 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 32(12), 1972.] *WR 146: 49*

Brenner, F. J., and P. D. Lyle. EFFECT OF PRIOR PHOTOPERIODIC CONDITIONS IN FOOD STORAGE AND HIBERNATION IN THE EASTERN CHIPMUNK. *Bull. Ecol. Soc. Am.* 52 (4): 39-40. Dec. 1971. [From J. Mammal. 53(1, suppl.), 1972. Abstract only.] *WR 146: 49*

Donohoe, Robert W., and Roger O. Beal. SQUIRREL BEHAVIOR DETERMINED BY RADIOTELEMETRY. *Ohio Fish & Wildl. Rep.* 2. p. 1-20, 8 figs. Apr. 1972. *WR 146: 49*
[Ohio Dep. Nat. Resour., New Marshfield.] Abstract: A microtransmitter and adjustable plastic collar suitable for attachment to the gray squirrel *(Sciurus carolinensis)* and fox squirrel *(Sciurus niger)* was developed in Ohio. It can be attached at the trap site within 5 min. Placed on 24 squirrels in the wild between January 1964 and September 1966, the transmitter-collar permitted radio tracking data to be obtained. The mean home range for 12 squirrels was 18.5 acres. The most active periods of the day were 10 a.m. and 2 p.m.; noon was the least active daylight period. The white oak-red oak-hickory forest type was occupied the greatest number of times by all squirrels. Beech and scarlet oak were most utilized for living sites. Transmitter-collars attached to six lactating females enabled litter data to be taken. A gray squirrel litter movement was recorded.

Farentinos, Robert Chris. SOCIAL DOMINANCE AND MATING ACTIVITY IN THE TASSEL-EARED SQUIRREL *(SCIURUS ABERTI FERREUS)*. *Ph.D. thesis, Univ. Colo.* 83 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 49*

Forbes, Richard B., and Larry W. Turner. NOTES ON TWO LITTERS OF TOWNSEND'S CHIPMUNKS. *J. Mammal.* 53(2): 355-359, 1 fig. May 1972. *WR 146: 50*
[Portland State Univ., Portland, Oreg.]

Heller, H. Craig. MEASUREMENTS OF CONVECTIVE AND RADIATIVE HEAT TRANSFER IN SMALL MAMMALS. J. Mammal. 53(2): 289-295, 1 fig. May 1972. *WR 146: 50*
[Stanford Univ., Stanford, Calif.] Abstract: The coefficient of convection and the effective surface area for the emission and absorption of thermal radiation are two physical characteristics of an organism that must be quantified before the energy budget of that organism can be calculated. These two parameters were measured by using internally heated, pelt-covered metal casts of four species of western chipmunks *(Eutamias alpinus, E. speciosus, E. amoenus,* and *E. minimus).* The casts were suspended in a vacuum and the effective radiating surface area *(A_{ee})* was calculated from the wattage necessary to maintain a constant cast radiating surface temperature *(T_r), T_r,* and chamber surface temperature. The casts were placed in a wind tunnel and the coefficients of convection at different wind speeds were calculated from T_r, wattage necessary to maintain that T_r, air temperature, tunnel wall temperature, and total cast surface area.

Heller, H. Craig, and Thomas Poulson. ALTITUDINAL ZONATION OF CHIPMUNKS *(EUTAMIAS)*: ADAPTATIONS TO ARIDITY AND HIGH TEMPERATURE. *Am. Midl. Nat.* 87(2): 296-313, 4 figs. Apr. 1972. *WR 146: 50*
[Stanford Univ., Stanford, Calif.]

Hilton, Donald F. J., and Jerome L. Mahrt. ECTO-PARASITES FROM THREE SPECIES OF *SPERMOPHILUS* (RODENTIA: SCIURIDAE) IN ALBERTA. *Canadian J. Zool.* 49(12): 1401-1504. 1971. [From Biol. Abstr. 53(12), 1972. In English with French summ.] *WR 146: 50*
[Univ. Alberta, Edmonton, Alberta, Canada.] Total populations of ectoparasites were obtained from nine *S. columbianus*, three *S. franklinii*, and 63 *S. richardsonii* ground squirrels. These ectoparasites included two spp. of lice (Anoplura), seven spp. of fleas, one sp. of tick, and 11 spp. of mites (only two of which are ground squirrel parasites). Comparisons were made for *S. richardsonii* to determine if ground squirrel age or sex had any effect upon burdens of lice and fleas. A list of free-living mites collected from these three spp. of *Spermophilus* is given together with a discussion of their association with ground squirrels.

Iverson, Stuart L., and Brian M. Turner. NATURAL HISTORY OF A MANITOBA POPULATION OF FRANKLIN'S GROUND SQUIRRELS. *Canadian Field Nat.* 86(2): 145-149, 2 figs. Apr.-June 1972. *WR 146: 50*
[Whiteshell Nuclear Res. Establishment, Pinawa, Manitoba, Canada.] Abstract: Franklin's ground squirrels *(Spermophilus franklinii* Sabine*)*, resident on the same old-field as a population of meadow voles *(Microtus pennsylvanicus)*, were observed for a period of 5 years. Adult males emerged from hibernation as early as mid-April, followed by adult females in early May. Both sexes appeared capable of reproduction upon emergence. The single litter ($\bar{x} = 9.4$ young) was born during June, and the adults were out of breeding condition shortly thereafter. Young squirrels did not reproduce in their first summer. Weight gains of adults occurred until mid-August, when the first adults entered hibernation. Young gained weight through September and some remained active until early October. Males moved greater distances than females, both sexes centering their activity in disturbed areas. Overwinter survival ranged from 20% to 60%. Stomach contents did not contain mammalian material, although captive squirrels readily killed and ate meadow voles and laboratory mice *(Mus)*. It was concluded the ground squirrels probably had little effect as predators on the vole population.

Jordan, James S. DISPERSAL PERIOD IN A POPULATION OF EASTERN FOX SQUIRRELS *(SCIURUS NIGER)*. *U.S. For. Serv. Res. Pap. NE-216.* 8 p. 1971. *WR 146: 50*
[NE Forest Exp. Sta. Lab., Warren, Pa.] Abstract: Rates of return from August to November among fox squirrels marked from January to May suggested that

the main dispersal movement occurred earlier in the year than previously reported for this species--sometime between late May and late July. Dispersal was greatest among juvenile squirrels, somewhat less among subadults, and least among adults; and it was proportionately greater among females--especially juvenile females.

Karpukhin, I. P., and N. M. Karpukhina. [EYE LENS WEIGHT AS A CRITERION OF AGE OF *SCIURUS VULGARIS*.] *Zool. Zh.* 50(2): 274-277. Feb. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 51*

Kavanau, J. Lee, and Carl E. Rischer. INFLUENCES OF AMBIENT TEMPERATURE ON GROUND SQUIRREL ACTIVITY. *Ecology* 53(1): 158-164, 4 figs. Winter 1972. *WR 146: 51*
[Univ. Calif., Los Angeles.] Voluntary locomotor activity in exercise wheels was used to assess the influence of ambient temperature on antelope ground squirrels *(Ammospermophilus leucurus)*.--Courtesy/ Paul A. Stewart.

Mehl, Reidar. ECTOPARASITTER PA EKORN, *SCIURUS VULGARIS*, I NORGE. [ECTOPARASITES FROM THE SQUIRREL, *SCIURUS VULGARIS*, IN NORWAY.] *Fauna* (Oslo) 24(2): 69-83, illus. 1971. [From Biol. Abstr. 53(12), 1972. In Norwegian with English summ.] *WR 146: 51*
[Zool. Mus., Oslo, Norway.]

Melchior, Herbert R. CHARACTERISTICS OF ARCTIC GROUND SQUIRREL ALARM CALLS. *Oecologia* (Berlin) 7(2): 184-190, illus. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 51*
[San Diego State Coll., San Diego, Calif.] *"Citellus undulatus."*

Michener, Daniel R. NOTES ON HOME RANGE AND SOCIAL BEHAVIOR IN ADULT RICHARDSON'S GROUND SQUIRRELS *(SPERMOPHILUS RICHARDSONII)*. *Canadian Field Nat.* 86(1): 77-79, 2 figs. Jan.-Mar. 1972. *WR 146: 51*
[Univ. Saskatchewan, Regina, Saskatchewan, Canada.] Abstract: The home range, movements, and aspects of the social behavior of adult *Spermophilus richardsonii* were observed during the summer of 1967 at Riding Mountain National Park, Manitoba. The amount of daily activity increased toward early June and became shorter toward mid July as hibernation approached. Daily activity was bimodal during June, with the least activity at noon. Home burrows tended to be acentric in the home ranges. Boundaries of home ranges were not clearly delineated. Squirrels tend to remain near the center of the home range in the first part of May, wander farther afield until mid June, and then spend more time in their home range centers as hibernation approaches. Squirrels initiating agonistic behavior did so from points in their home ranges highly frequented by them, whereas squirrels that were chased were in areas seldom frequented by them.

Michener, Gail R. MATERNAL BEHAVIOUR IN RICHARDSON'S GROUND SQUIRREL, *SPERMOPHILUS RICHARDSONII RICHARDSONII*: RETRIEVAL OF YOUNG BY LACTATING FEMALES. *Anim. Behav.* 19(4): 653-656, 1 fig. Nov. 1971. *WR 146: 51*
[Univ. Saskatchewan, Regina, Saskatchewan, Canada.] Abstract: The experimental study of retrieval has been extended to a Sciurid. Young were placed outside the nest and the time for the mother to retrieve them noted. Average retrieval time per young fell from 45 s on the first test to 15 s on the second. The improvement resulted from a decrease in the time spent in the nest between retrievals. No improvement in latency to retrieve nor in handling time was noted. The same improvement occurred if tests were started 10 days post-partum. Retrieval ceased abruptly about 3 weeks after birth. Retrieval of up to 200 young was noted.

Quanstrom, Walter Roy. BEHAVIOUR OF RICHARDSON'S GROUND SQUIRREL *SPERMOPHILUS RICHARDSONII RICHARDSONII*. *Anim. Behav.* 19(4): 646-652, 2 figs. Nov. 1971. *WR 146: 51*
[Northwest Nazarene Coll., Nampa, Idaho.] Abstract: Observations in the field were made on Richardson's ground squirrel, *Spermophilus richardsonii*

richardsonii, for 3 years. The behaviours observed are classified as posture, locomotion, elimination, tail flicking, nest building, and grooming. Each is described and discussed. Drawings of postures are included.

Ruff, Robert LaVerne. TELEMETERED HEART RATES OF FREE-LIVING UINTA GROUND SQUIRRELS IN RESPONSE TO SOCIAL INTERACTIONS. *Ph.D. thesis, Utah State Univ.* 136 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 52*
"Spermophilus armatus."

Sheppard, David H. HOME RANGES OF CHIPMUNKS *(EUTAMIAS)* IN ALBERTA. *J. Mammal.* 53(2): 379-380. May 1972. *WR 146: 52*
[Univ. Saskatchewan, Regina, Saskatchewan, Canada.]

Smith, Christopher C., and David Follmer. FOOD PREFERENCES OF SQUIRRELS. *Ecology* 53(1): 82-91, 1 fig. Winter 1972. *WR 146: 52*
[Kans. State Univ., Manhattan.] Gray and fox squirrels *(Sciurus carolinensis* and *S. niger)* have similar food preferences. Their niche differences are related to differences in foraging and predator escape behavior. The annual pattern of these squirrels make hickory nuts and walnuts the most efficient food in fall and spring and acorns the most efficient in winter. This change in the relative efficiency of foods results in the squirrels acting as dispersing agents for seeds of both oaks and hickories.--Courtesy/ Paul A. Stewart.

Surve, V. G. THE BREEDING OF THE INDIAN GIANT SQUIRREL *(RATUFA INDICA)* IN CAPTIVITY. *J. Bombay Nat. Hist. Soc.* 67(3): 551-552. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 52*

Sviridenko, P. A. [ROLE OF *SCIURUS VULGARIS* L. IN DISTRIBUTION OF WALNUT.] *Vestn. Zool.* 1: 87-88. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 52*

Turner, Larry Webster. AUTECOLOGY OF THE BELDING GROUND SQUIRREL IN OREGON. *Ph.D. thesis, Univ. Ariz.* 166 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 32 (10), 1972.] *WR 146: 52*
"Spermophilus beldingi oregonus."

Wood, B., J. Lee, S. C. Hong, and A. Hassan. A CASE OF SERIOUS DAMAGE BY THE RED-BELLIED SQUIRREL *(CALLOSCIURUS NOTATUS* BODDAERT) IN YOUNG OIL PALM. *The Planter* 46(537): 414-424. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 52*

Zimmerman, Earl G. GROWTH AND AGE DETERMINATION IN THE THIRTEEN-LINED GROUND SQUIRREL, *SPERMOPHILUS TRIDECEMLINEATUS. Am. Midl. Nat.* 87(2): 314-325, 5 figs. Apr. 1972. *WR 146: 52*
[North Tex. State Univ., Denton.] External features, skulls, skeletons and bacula were used to study growth and aging of the thirteen-lined ground squirrel. --From abstr.

BEAVER

Denisiuk, Zygmunt, and Zbigniew Głowaciński. OSTOJE BOBRÓW W POLSCE ORAZ NIEKTÓRE ASPEKTY ICH OCHRONY. [BEAVER SANCTUARIES IN POLAND AND SOME ASPECTS OF THEIR PROTECTION.] *Chrońmy Przyrodę Ojczystą* 27(6): 26-35, 5 figs. Nov.-Dec. 1971. In Polish with English summ. *WR 146: 52*
"Castor canadensis and *C. fiber."*

Northcott, Tom H. FEEDING HABITS OF BEAVER IN NEWFOUNDLAND. *Oikos* 22(3): 407-410, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 52*
[Lakehead Univ., Thunder Bay, Ontario, Canada.] The Newfoundland beaver *Castor canadensis caecator* has flourished in an area that lacks abundant supplies of those plant species normally considered to be preferred food. Aspects of the

utilization of vegetation by beavers are described on the basis of field studies conducted during periods of 1961, 1962 and 1963 in three areas of the province. Where aspen *Populus tremuloides* occurs, always in small amounts, it is soon utilized completely. Alders *Alnus rugosa* and *A. crispa* are the most important plants, being the chief winter food and the major building material. Aquatic vegetation, particularly the water lilies *Nuphar variegatum* and *N. microphyllum*, is the major constituent of the summer diet.

Panov, G. M. [PRESENT STATE OF *CASTOR FIBER* L. POPULATION IN THE UPPER AND MIDDLE FLOW OF THE UBORT RIVER AND PROSPECTS OF ITS ECONOMIC USE.] *Vestn. Zool.* 5(5): 81-82. 1971. [From Biol. Abstr. 53(12), 1972. In Russian with English summ.] *WR 146: 53*

Pucek, Zdzisław. ROSPRZESTRZENIANIE SIE I STAN OCHRONY BOBRA EUROPEJSKIEGO NA BIAŁOSTOCCZYŹNIE. [DISTRIBUTION AND STATE OF CONSERVANCY OF THE EUROPEAN BEAVER IN THE PROVINCE OF BIAŁYSTOK.] *Chrońmy Przyrode Ojczysta* 28(1): 28-38, 2 figs. Jan.-Feb. 1972. In Polish with English summ. *WR 146: 53*
"Castor fiber."

Pullen, Thomas Marion, Jr. SOME EFFECTS OF BEAVER *(CASTOR CANADENSIS)* AND BEAVER POND MANAGEMENT ON THE ECOLOGY AND UTILIZATION OF FISH POPULATIONS ALONG WARM-WATER STREAMS IN GEORGIA AND SOUTH CAROLINA. *Ph.D. thesis, Univ. Ga.* 94 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 53*

MUSKRAT & NUTRIA

Evdokimova, O. A., and Z. S. Shishkina. [ON THE ROLE OF THE MUSKRAT IN A NATURAL FOCUS OF LEPTOSPIROSES IN THE ULOANOV DISTRICT.] *Zool. Zh.* 50(7): 1116-1119. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 53*

Gersdorf, E. BEOBACHTUNGEN AN IN GEFANGENSCHAFT GEHALTENEN BISAM. [OBSERVATIONS ON MUSKRATS KEPT IN CAPTIVITY.] *Z. Angew. Zool.* 58(1): 29-42. 1971. [From Biol. Abstr. 53(4), 1972. In German with English summ.] *WR 146: 53*
[Pflanzenschutzamt, 3011 Ahlem/Hannover, Germany.] *"Ondatra zibethicus."*

Le Boulenge, Eric. ETAT DE NOS CONNAISSANCES SUR L'ECOLOGIE DU RAT MUSQUE *ONDATRA ZIBETHICA* L. [THE STATE OF OUR KNOWLEDGE ON THE ECOLOGY OF THE MUSKRAT *ONDATRA ZIBETHICA* L.] *Terre Vie* 26(1): 3-37, 1 fig. 1972. In French with English summ. *WR 146: 53*
[Univ. Catholique, Louvain, Belgium.] Dwelling places, home range, nutrition, reproduction, movements, predation and competition, effects of abiotic factors upon behavior, and overcrowding of *Ondatra zibethica.*

Vincent, J.-P. L'UTILISATION D'UN COMPTEUR DE PASSAGE À LA GUEULE DES TERRIERS DU RAT MUSQUÉ *ONDATRA ZIBETHICA* (L.). [THE UTILIZATION OF A TRAFFIC COUNTER AT THE MOUTH OF BURROWS OF THE MUSKRAT *ONDATRA ZIBETHICA* (L.).] *Ann. Zool. Ecol. Anim.* 3(2): 269-273, illus. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 53*
[Inst. Nat. Rech. Agron., Jouy-en-Josas, France.]

BEARS

Belton, D. GRIZZLIES. *Victoria Nat.* 28(2): 18-19. Oct. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 53*

Hatler, David F. FOOD HABITS OF BLACK BEARS IN INTERIOR ALASKA. *Canadian Field Nat.* 86(1): 17-31, 3 figs. Jan.-Mar. 1972. *WR 146: 54*

[Univ. Alaska, College.] Abstract: Black bears in the interior of Alaska, emerging from winter dens in early May, spend much of the first three months of their annual activity season in riverbottom and other lowland situations where the shoots and new leaves of green vegetation, especially *Equisetum* spp. compose the bulk of their diet. From the last half of July until mid-September, bears are observed most commonly in alpine areas where fruits, especially *Vaccinium uliginosum*, are heavily used. Animal food, constituting less than 15 per cent of the annual diet, is apparently taken whenever it is obtainable, and is frequently carrion. Many animal food occurrences involve colonial insects. Due to characteristics of bear feeding and digestion, scat analysis appears quite reliable for frequency of occurrence data and is probably suitable for most basic food habits determinations. For studies in which emphasis is to be placed on the animal foods of bears, a series of stomachs may also be needed to insure proper interpretation of results.

Herrero, Stephen, editor. BEARS--THEIR BIOLOGY AND MANAGEMENT / PAPERS AND PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON BEAR RESEARCH AND MANAGEMENT / CALGARY, ALBERTA, CANADA / 6-9 NOVEMBER 1970. *IUCN* (Int. Union Conserv. Nat. Nat. Resour.) *Publ. New Ser.* no. 23. 371 p., illus. 1972. Available from IUCN, 1110 Morges, Switzerland, at 34.50 Swiss francs (U.S. $9.00) per copy postpaid. *WR 146: 54*

Includes the following papers: *Radio tracking brown bears on Kodiak Island*, Vernon D. Berns and Richard J. Hensel; *Black bear population dynamics at Cold Lake, Alberta, 1968-1970*, G. A. Kemp; *Population characteristics of the northern interior grizzly in the Yukon Territory, Canada*, A. M. Pearson; *Use of foot trail travellers in the Great Smoky Mountains National Park to estimate black bear* (Ursus americanus) *activity*, Michael R. Pelton; *A summary of the black bear population characteristics in Pennsylvania*, Gary C. Wakefield; *Grizzly bear mortality and studies in Montana*, Kenneth R. Greer; *Life history of the brown bear* (Ursus arctos *L.*) *in northeast Siberia*, A. A. Kistchinski; *The brown bear* (Ursus arctos *L.*) *in Europe: decline, present distribution, biology and ecology*, K. Curry-Lindahl; *Data on grizzly bear denning activities and behavior obtained by using wildlife telemetry*, Frank C. Craighead, Jr. and John J. Craighead; *Physiological condition of three species of bears in winter dens*, G. Edgar Folk, Jr., Mary A. Folk, and Judy J. Minor; *Remarks on denning habits of Alaska brown bears*, Jack W. Lentfer, Richard J. Hensel, Leo H. Miller, Leland P. Glenn, and Vernon D. Berns; *Infra-red scanning for polar bear*, James W. Brooks; *Further notes on polar bear denning habits*, Charles J. Jonkel, George B. Kolenosky, Richard J. Robertson, and Richard H. Russell; *Norwegian polar bear hunt, management and research*, Thor Larsen; *Polar bear--sea ice relationships*, Jack W. Lentfer; *Immobilization and tagging of polar bears in maternity dens*, A. A. Kistchinski and S. M. Uspenski; *New data on the winter ecology of the polar bear* (Ursus maritimus *Phipps*) *on Wrangel Island*, S. M. Uspenski and A. A. Kistchinski; *Reproductive synchrony in the female black bear*, Stuart L. Free and Eugene McCaffery; *Notes on behavioral development of two female black bear cubs: the first eight months*, Gordon M. Burghardt and Lorraine S. Burghardt; *Aspects of evolution and adaptation in American black bears* (Ursus americanus *Pallas*) *and brown and grizzly bears* (U. arctos *Linné*) *of North America*, Stephen Herrero; *Social behavior of the Alaska brown bear*, Derek Stonorov and Allen W. Stokes; *Knowledge and attitudes concerning black bears by users of the Great Smoky Mountains National Park*, Gordon M. Burghardt, Ronald O. Hietala, Michael R. Pelton; *Preservation and management of grizzly bears in Yellowstone National Park*, Glen F. Cole; *Bears and man in Glacier National Park, British Columbia, 1880-1980*, John S. Marsh; *Conservation of the grizzly--ecologic and cultural considerations*, A. M. Stebler; *Grizzly bear--man relationships in Yellowstone National Park*, John J. Craighead and Frank C. Craighead, Jr.; *Bear damage and bear control in Japan*, Tetsuo Imakai; and *The status and conservation of bears (Ursidae) of the world--1970*, I. McT. Cowan.

Larsen, Thor. AIR AND SHIP CENSUS OF POLAR BEARS IN SVALBARD (SPITSBERGEN). *J. Wildl. Manage.* 36(2): 562-570. Apr. 1972. *WR 146: 55*
[Univ. Oslo, Oslo, Norway.] Abstract: Polar bears *(Ursus maritimus)* were counted from military airplanes and from sealing vessels in the eastern Svalbard (Spitsbergen) area between 1966 and 1968. Seven aerial surveys were flown between March and October 1966 and eight in the same period in 1967. Approximate linear transects were flown, but Kong Karls Land was also carefully surveyed each time. Ship counts were performed in July and August 1967 and in August 1968. Success of the surveys varied with weather and ice conditions. Airplane speed and altitude were the most important limiting factors for absolute counts. Observation distance, weather conditions, the observer's experience, and the visual acuity of the observers for color affected the ship counts. Ship counts were considered more reliable than airplane counts, but both methods were inaccurate. Other methods, such as infrared scanning and multiple quadrat sample counts with ship and helicopter, are expected to yield better results. The total number of polar bears in the Svalbard area was estimated at between 1,500 and 1,900 animals in 1967 and 1968. Previous world estimates of polar bears are unreliable because of the lack of evaluation of the methods used, and because the census figures in one area cannot be used in a worldwide estimate. The total polar bear population for the world is probably closer to 20,000 animals than to the lower figures often suggested.

Martinka, C. J. STATUS AND MANAGEMENT OF GRIZZLY BEARS IN GLACIER NATIONAL PARK. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 36: 312-322. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 55*

Martinka, Clifford J. GRIZZLY BEARS IN NATIONAL PARKS. *Pac. Search* 6(8): 6-7, illus. May 1972. *WR 146: 55*
Management and life history information on *Ursus arctos*.

RACCOON, RINGTAIL, COATI

Inabnit, Ralph, Bill Chobotar, and John V. Ernst. *EIMERIA PROCYONIS* SP. N., AN *ISOSPORA* SP., AND A REDESCRIPTION OF *E. NUTTALLI* YAKIMOFF AND MATIKASCHWILI, 1932 (PROTOZOA: EIMERIIDAE) FROM THE AMERICAN RACCOON *(PROCYON LOTOR)*. *J. Protozool.* 19(2): 244-247, 3 figs. May 1972. *WR 146: 55*
[Andrews Univ., Berrien Springs, Mich.]

Winslow, E. L., and D. E. Sonenshine. TRAP MANIFESTED BEHAVIOR AND DISTRIBUTION OF RACCOONS IN TWO NATURAL AREAS OF VIRGINIA AS RELATED TO AVAILABLE FOODS. *Va. J. Sci.* 22(3): 103. 1971. [From J. Mammal. 53(1, suppl.), 1972. Abstract only.] *WR 146: 55*

MUSTELIDS

Ben'kovskii, L. M. [MIGRATION OF *MUSTELA (MUSTELA) VISON* SCHR. IN THE SAKHALIN REGION.] *Vestn. Zool.* 5(4): 19-25. 1971. [From Biol. Abstr. 53(9), 1972. In Russian with English summ.] *WR 146: 55*

Brown, Larry N. LONG-TAILED WEASEL *(MUSTELA FRENATA)* IN SOUTHERN FLORIDA. *J. Mammal.* 53(2): 407. May 1972. *WR 146: 55*
[Univ. South Fla., Tampa.]

Drabble, P. AURAL EVIDENCE OF SPRING MATING IN BADGERS *(MELES MELES)*. *J. Zool.* 162(4): 547-548. Dec. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 55*

Erlinge, Sam. THE SITUATION OF THE OTTER POPULATION IN SWEDEN. *Viltrevy* (Stockholm) 8(5): 379-397, 5 figs. 1972. In English with Swedish summ. *WR 146: 56*

[Univ. Lund, Lund, Sweden.] Summary: The situation and trend of the otter population *(Lutra lutra* L.) in Sweden was examined. Game records indicate a continuous decrease of the population from about 1950. The situation in recent years is shown from a nation-wide inventory made in the winter of 1965-66. Two polluted water systems were investigated in 1970. Otters were absent or sparse in habitats below the outlets of industrial waste water. These findings and the received reports strongly indicate that water pollution is an important cause of the decrease as was too hard exploitation of the otter population. The mink has a negative influence due to food competition in winter but has probably not been a major cause of the decrease.

Hansson, Ingrid. CRANIAL HELMINTH PARASITES IN SPECIES OF MUSTELIDAE. II. REGIONAL FREQUENCIES OF DAMAGE IN PRESERVED CRANIA FROM DENMARK, FINLAND, SWEDEN, GREENLAND AND THE NORTHEAST OF CANADA COMPARED WITH THE HELMINTH INVASION IN FRESH MUSTELID SKULLS FROM SWEDEN. *Ark. Zool.* 22(15): 571-594, 16 figs. 1970. *WR 146: 56*

[Univ. Lund, Lund, Sweden.] Preserved skulls of 333 *Mustela nivalis*, 689 *M. erminea*, 322 *M. putorius*, 28 *M. lutreola*, 406 *M. vison*, 438 *Martes martes*, 74 *M. foina*, 387 *Lutra lutra*, 583 *Meles meles*, and 102 *Gulo gulo* from Denmark, Finland and Sweden, 30 *M. erminea* from Greenland and 28 *M. erminea* from NE Canada were investigated for superficial skull lesions due to parasitic helminths in the nasal sinuses. All lesions were similar with respect to localization, extent and appearances to those found in fresh skulls of Swedish mustelids invaded by *Skrjabingylus* spp. (Petrov, 1927).--From abstr.

Hansson, Ingrid. SKULL NEMATODES IN MUSTELIDS. *Doctoral thesis, Univ. Lund, Lund, Sweden.* 21 p., 10 figs. 1971. *WR 146: 56*

Correlates three of the author's published papers [Transmission of the parasitic nematode *Skrjabingylus nasicola* (Leuckart 1842) to species of *Mustela* (Mammalia). *Oikos* 18: 247-252. 1967; Cranial helminth parasites in species of Mustelidae. I. Frequency and damage in fresh mustelids from Sweden. *Oikos* 19: 217-233. 1968; Cranial helminth parasites in species of Mustelidae. II. Regional frequencies of damage in preserved crania from Denmark, Finland, Sweden, Greenland and the northeast of Canada compared with the helminth invasion in fresh mustelid skulls from Sweden. *Ark. Zool.* 22: 571-594. 1970.] with a fourth, unpublished paper (Seasonal and environmental conditions affecting the invasion of mustelids by larvae of the nematode *Skrjabingylus nasicola* Leuckart 1842. MS 42 p.). The fourth paper, published here in full, is to be printed in *Oikos*.

Khromovskikh, B. V. [EXPERIENCE OF SEA OTTER MARKING BY MEANS OF PELAGE CHANGING.] *Tikhookeansk. Nauk.-Issled. Inst. Rybonogo Khozialst. Okeanograf. Isv.* (Vladivostok) 70: 250-252. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 56*

Lankester, Murray W., and Roy C. Anderson. THE ROUTE OF MIGRATION AND PATHOGENESIS OF *SKRJABINGYLUS* SPP. (NEMATODA: METASTRONGYLOIDEA) IN MUSTELIDS. *Canadian J. Zool.* 49(9): 1283-1293, illus. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 56*

[Univ. Guelph, Guelph, Ontario, Canada.]

MacLennan, R. R., and E. D. Bailey. ROLE OF SEXUAL EXPERIENCE IN BREEDING BEHAVIOR OF MALE RANCH MINK. *J. Mammal.* 53(2): 380-382. May 1972. *WR 146: 56*

[Wildl. Res. Unit, 311-21 Street East, Saskatoon, Saskatchewan, Canada.]

Maminov, M. K., and A. M. Shitikov. [DISTRIBUTION, NUMBER, AND SOME FEATURES OF SEA OTTER ECOLOGY ON PARAMUSHIR ISLAND.] *Tikhookeansk. Nauk.-Issled. Inst. Rybonogo Khozialst. Okeanograf. Isv.* (Vladivostok) 70: 169-175. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 56*

Maminov, M. K., and A. M. Shitikov. [SEA OTTER FEEDING ON PARAMUSHIR ISLAND.] *Tikhookeansk. Nauk.-Issled. Inst. Rybonogo Khoziaist. Okeanograf. Isv.* (Vladivostok) 70: 176-179. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 57*

Northcott, T. H. WINTER PREDATION OF *MUSTELA ERMINEA* IN NORTHERN CANADA. *Arctic* (Quebec) 24(2): 141-143. June 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 57*

Otsu, S. [ON THE FOOD HABIT OF JAPANESE MINK, *MUSTELA ITATSI ITATSI* TEMMINCK IN WINTER AND ITS PROTECTION.] *Japanese J. Appl. Entomol. Zool.* (Tokyo) 15(2): 87-88. June 1971. [From J. Mammal. 53(1, suppl.), 1972. In Japanese.] *WR 146: 57*

Rausch, R. A., and A. M. Pearson. NOTES ON THE WOLVERINE IN ALASKA AND THE YUKON TERRITORY. *J. Wildl. Manage.* 36(2): 249-268, 8 figs. Apr. 1972. *WR 146: 57*

[Alaska Dep. Fish & Game, Anchorage.] Abstract: New data concerning the life history of the wolverine *(Gulo gulo)* were obtained from 1,059 specimens taken in Alaska and the Yukon Territory during 1960-68. Fifty percent of female wolverines 16 to 28 months old were pregnant; 91% of those 29 months and older were pregnant. Wolverines apparently breed in May, June, and July. The blastocysts implant primarily in January and February, and most of the young are born in February and March. Implantation occurs from December through March and parturition occurs from January through April. Fifty-four litters *(in utero)* averaged 3.5 fetuses. Most male wolverines are sexually mature when 14 to 15 months old. In males, testis weights indicate that the peak of the breeding condition is in May and June. Mean body weights of whole wolverines were: adult males, 31.2 pounds; juvenile males, 29.1 pounds; adult females, 20.7 pounds; and juvenile females, 20.1 pounds. The wolverine is not an endangered species and its habitat is reasonably secure.

Rowe-Rowe, D. T. THE AFRICAN WEASEL, *POECILOGALE ALBINUCHA* GRAY. OBSERVATIONS ON BEHAVIOUR AND GENERAL BIOLOGY. *Lammergeyer* no. 15. p. 39-58, 8 figs. Mar. 1972. *WR 146: 57*

[P.O. Box 662, Pietermaritzburg, Natal, South Africa.] Ten live African weasels *Poecilogale albinucha* were kept in captivity for periods varying from two days to two and a half years. Available literature on the species is reviewed, and information on biology and behavior is consolidated and added to. Measurements of specimens are given and dorsal striping and the mammary formula are commented on.--From summ.

Rowe-Rowe, D. T. DISTRIBUTION OF THE AFRICAN WEASEL *POECILOGALE ALBINUCHA* GRAY, IN SOUTHERN AFRICA. *Lammergeyer* no. 15. p. 59-64, 2 figs. Mar. 1972. *WR 146: 57*

[P.O. Box 662, Pietermaritzburg, Natal, South Africa.] "The majority of the records (64%) are from wooded or open woodland areas (bushveld, *Brachystegia* woodland, forest and scrub forest); 22% are from grassland areas (sourveld, mixed veld); 8.1% are from the drier areas (Karroo); and 4.6% from the moister scrubby heath areas (Macchia). Very few records are from localities more than 1,500 m above sea level (10.5%). Fifty percent of the localities are at altitudes ranging from 1,000-1,500 m and the remainder are practically evenly divided between 0-500 m and 500-1,000 m."

West, R. B., and P. Nicholson. THE SUFFOLK OTTER SURVEY: A PRELIMINARY REPORT. *Suffolk Nat. Hist.* 15(5): 452-455. July 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 57*

Albone, E. S., and M. W. Fox. ANAL GLAND SECRETION OF THE RED FOX. *Nature* 233(5321): 569-570. 22 Oct. 1971. *WR 146: 58*
[Univ. Bristol, Bristol, England.] *"Vulpes vulpes fulva."*

Dieterich, Robert A., and Rollo W. Van Pelt. JUVENILE OSTEOMALACIA IN A COYOTE. *J. Wildl. Dis.* 8(2): 146-148, 3 figs. Apr. 1972. *WR 146: 58*
[Univ. Alaska, Fairbanks.] Abstract: Juvenile osteomalacia was diagnosed in a 1-month-old coyote puppy *(Canis latrans incolatus)* reared on an artificial diet. Hematologic and radiographic findings during the course of the disease are presented. A successful treatment regime consisting of administration of parenteral and oral calcium and supportive treatment is outlined.

Fairley, J. S. THE CONTROL OF THE FOX *VULPES VULPES* (L.) POPULATION IN NORTHERN IRELAND. *Sci. Proc. Roy. Dublin Soc. Ser. B* 3(3): 43-47. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 58*
[Univ. Coll., Galway, Ireland.] A review of the mechanisms regulating the fox population; each known density-dependent factor is examined in turn. Self-regulating behavior, such as territorial fighting, is insignificant. Considerable indirect evidence suggests that the many foxes killed by man have no long term effect. It is improbable that lack of food restricts the population directly. Extensive studies of disease, however, reveal the common occurrence of a number of pathogens of importance. It is suggested that disease regulates fox numbers by inducing a high cub mortality. As the reputation of the fox as a pest is exaggerated and the bounty does not limit the population, the justification of such a bounty on economic grounds is doubtful.

Fairley, J. S. NOTES ON THE BREEDING OF THE FOX *(VULPES VULPES)* IN COUNTY GALWAY, IRELAND. *J. Zool.* 164: 262-263. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 58*

Fishman, Irving Y. TASTE RESPONSES IN THE RED FOX. *Physiol. Zool.* 44(3): 171-176. July 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 58*

Hochstrasser, Gerhardt. DIE ZAHNZAHL DES ROTFUCHSES, *CANIS VULPES* (LINNÉ, 1758), IM VERGLEICH MIT DER ANDERER CANIDEN. [THE TOOTH COUNT OF THE RED FOX, *CANIS VULPES* (LINNÉ, 1758), IN COMPARISON WITH THE OTHER CANIDAE.] *Saugetierkd. Mitt.* 19(3): 194-198, illus. 1971. [From Biol. Abstr. 53(11), 1972. In German with English summ.] *WR 146: 58*
[Str. L. Ranghet 13 A, Timiscara, Romania.]

Knowlton, Frederick F. PRELIMINARY INTERPRETATIONS OF COYOTE POPULATION MECHANICS WITH SOME MANAGEMENT IMPLICATIONS. *J. Wildl. Manage.* 36(2): 369-382, 5 figs. Apr. 1972. *WR 146: 58*
[Bur. Sport Fisheries & Wildl., San Antonio, Tex.] The need for control of coyote *(Canis latrans)* depredations and a simultaneous demand for recognition of the aesthetic and ecologic values of the species create a conflict in resource utilization that should be resolved through more intensive management. A coyote population model is proposed from current estimates of density, reproduction, population structure, and mobility.--From abstr.

Lennart, Persson, and Dan Christensson. ENDOPARASITER HOS RODRAV I SVERIGE. [ENDOPARASITES OF THE RED FOX IN SWEDEN.] *Zool. Revy* 33(1/2): 17-26, illus. 1971. [From Biol. Abstr. 53(12), 1972. In Swedish.] *WR 146: 58*
[Statens Veterinaermed. Anst., Pack, Stockholm, Sweden.] *"Vulpes vulpes."*

Murakami, Takayuki, Hiroshi Itagaki, Isao Saito, Hirozo Ashizawa, and Dai Nosaka. [INFESTATION OF RACCOON DOGS CAPTURED IN MIYAZAKI PREFECTURE WITH *CONCINNUM TEN* (YAMAGUTI 1939).] *Bull. Fac. Agric. Miyazaki Univ.* 17(1): 96-103, illus. 1970. [From Biol. Abstr. 53(10), 1972. In Japanese with English summ.] *WR 146: 58*
"Nyctereutes procyonoides viverrinus."

Persson, Lennart. FYND AV EN SALLSYNT PARASITISK NEMATOD HOS RODRAV I SVERIGE. [FIND OF A PARASITIC NEMATODE FROM THE RED FOX IN SWEDEN.] *Zool. Revy* 32(4): 100-104, illus. 1970. [From Biol. Abstr. 53(8), 1972. In Swedish with English summ.] *WR 146: 59*

[SVA, Stockholm, Sweden.] Two kinds of the parasitic nematode *Rectularia cahirensis* are described from 2 of 192 investigated red foxes *(Vulpes vulpes)* in Sweden.

Phillips, Robert L. NOTES ON THE BEHAVIOR OF RED FOXES IN A LARGE ENCLOSURE. *Proc. Iowa Acad. Sci.* 78: 36-37. 1971. *WR 146: 59*

[Bur. Sport Fisheries & Wildl., Forest. Sci. Lab., Missoula, Mont.] Synopsis: Information is presented on the general behavior of captive red foxes *(Vulpes vulpes)* living in a 13-acre enclosure with a high cottontail rabbit *(Sylvilagus floridanus)* population. The high predator population rapidly reduced the prey population in a short period of time. Observations were made on the feeding behavior of young fox pups and their responses to traps. There was evidence that territories were established by the foxes, even in this limited enclosure.

Phillips, R. L., R. D. Andrews, G. L. Storm, and R. A. Bishop. DISPERSAL AND MORTALITY OF RED FOXES. *J. Wildl. Manage.* 36(2): 237-248, 3 figs. Apr. 1972. *WR 146: 59*

[Bur. Sport Fisheries & Wildl., Forest. Sci. Lab., Missoula, Mont.] Abstract: During the period from 1963 to 1968, 926 red foxes *(Vulpes fulva)* were captured at dens, ear-tagged, and released at the points of capture in Iowa and Illinois. Tag returns from 367 marked foxes provided data concerning dispersal and mortality. Some juveniles apparently begin to disperse from the natal area in late September and early October. The average straight-line distances between release sites and recovery sites were 18.4 miles and 6.2 miles for 171 juvenile males and 124 juvenile females, respectively. Fourteen juvenile males and one juvenile female were recovered more than 50 miles from their natal ranges. Locations of recaptures were not randomly distributed ($P < 0.05$) with respect to direction of travel. The Mississippi River appears to act as a barrier to foxes that disperse on either side of it in Iowa and Illinois. Hunting and trapping accounted for about 80% of the mortality of the foxes recovered in this study. Annual recovery rates for tagged foxes ranged from 22 to 44% in Iowa and from 18 to 35% in Illinois. Vulnerability of foxes to hunting appears to be interrelated with snow cover and land use in local areas.

Russell, Dennis N., and James H. Shaw. NOTES ON THE RED WOLF *(CANIS RUFUS)* IN THE COASTAL MARSHES AND PRAIRIES OF EASTERN TEXAS. *Tex. Parks & Wildl. Dep.* 5 p., 1 fig. 1971. *WR 146: 59*

[John H. Reagan Bldg., Austin, Tex.] Reprint of paper presented 12 Mar. 1971, Texas Academy of Science.

Scott, Morris Douglas. ECOLOGY AND ETHOLOGY OF FERAL DOGS IN EAST-CENTRAL ALABAMA. *Ph.D. thesis, Auburn Univ.* 213 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 59*

Underwood, Lawrence Statton. THE BIOENERGETICS OF THE ARCTIC FOX *(ALOPEX LAGOPUS L.). Ph.D. thesis, Pa. State Univ.* 92 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 59*

Vauk, Gottfried. ZWEI BEMERKENSWERTE BEOBACHTUNGEN AM SCHABRACKENSCHAKAL *(CANIS MESOMELAS)* IN SW-AFRIKA. [TWO REMARKABLE OBSERVATIONS OF THE JACKAL *(CANIS MESOMELAS)* IN SW AFRICA.] *Z. Saugetierkd.* 36(4): 213-215. 1971. [From Biol. Abstr. 53(3), 1972. In German.] *WR 146: 59*

[Vogelwarte Helgoland, Postfach 1220, Helgoland, Germany.]

Von Frisch, Otto, and Heide Von Frisch. BEOBACHTUNGEN BEI DER HANDAUFZUCHT UND SPAETEREN AUSSETZUNG EINER FUCHSFAEHE *(VULPES VULPES).* [OBSERVATIONS OF HAND-RAISED FEMALE FOX *(VULPES VULPES).*] *Z. Tierpsychol.* 28(5): 534-541, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 59*

[Staatlich. Naturhist. Mus., Braunschweig, Germany.]

Yoho, Noel S., and Vernon G. Henry. FOODS OF THE GRAY FOX *(UROCION CINEREO-ARGENTEUS)* ON EUROPEAN WILD HOG *(SUS SCROFA)* RANGE IN EAST TENNESSEE. *J. Tenn. Acad. Sci.* 47(2): 77-78. Apr. 1972. *WR 146: 60*

[Univ. Tenn., Knoxville.] Abstract: Stomach contents of 24 gray foxes *(Urocyon cinereoargenteus)* collected January to July, 1966-68, were examined to determine food habits of foxes on the Tellico Wildlife Management Area in southeast Tennessee. Food items were identified to the lowest taxonomic category possible. Cottontail *(Sylvilagus floridanus)*, arthropods, small mammals, wild hogs *(Sus scrofa)*, and birds in that order made up 84% of the diet. Scavenging was responsible for at least 18% of the food items. Wild hog in the diet was believed to be carrion as hogs consumed were adults. No evidence was found of predation on piglets.

CATS

Chaudhuri, Shri A. B., and Shri K. Chakrabarti. WILDLIFE BIOLOGY OF THE SUNDARBANS FORESTS. (I) OBSERVATIONS ON TIGERS. *Div. For. Office* (Calcutta, India). 18 p. + 4 graphs. [1972.] *WR 146: 60*

[Indian For. Serv., Calcutta, India.] Abstract: The Sundarbans tiger stands supreme in the tiger map of the World. It is believed that they are hereditary man-eaters, fiercest, most cunning and intelligent of all tigers. The present observations include their habitat types, vulnerable operational zones, comparative casualty pattern among different professional men, casualty in various age groups of men, monthly and yearly pattern of casualty, breeding potential, food habits and other aspects of their behaviour. Such studies have never been made in the estuarine tract in the present manner and it is expected that this study will enable to throw lights on many facts so far unknown about the tigers of the tract.

Hald-Mortensen, Poul. OM LOSSEN I THY. [LYNX IN THY.] *Flora Fauna* 77(3): 85-86, illus. 1971. [From Biol. Abstr. 53(12), 1972. In Danish.] *WR 146: 60*

[Copenhagen Univ., Copenhagen, Denmark.]

Schuh, Josef, Franz Tietze, and Peter Schmidt. BEOBACHTUNGEN ZUM AKTIVITAETS-VERHALTEN DER WILDKATZE *(FELIS SILVESTRIS* SCHREBER). [OBSERVATIONS ON THE ACTIVITY OF THE WILD CAT *(FELIS SILVESTRIS* SCHREBER).] *Hercynia Neue Folge* 8 (2): 102-107, illus. 1971. [From Biol. Abstr. 53(4), 1972. In German.] *WR 146: 60*

[Wilhelm-von-Kuegelgen-St. 10, Halle, Germany.] The daily activity of the wild cat in the wild in the Harz area and that of 1 wild cat in captivity was studied. Increased activity was observed in the evening. The time of this peak activity is dependent on the length of the day. The daily activity of the field mouse *(Apodemus sylvaticus L.)*, an important food of the wild cat, is compared to that of the wild cat.

BIG GAME, GENERAL

Alendal, Einar. DREKTIGHETSPERIODEN HOS MOSKUSFE. [THE GESTATION PERIOD OF MUSKOXEN.] *Fauna* (Oslo) 24(2): 101-103, illus. 1971. [From Biol. Abstr. 53(6), 1972. In Norwegian with English summ.] *WR 146: 60*

[Univ. Bergen, Bergen, Norway.]

Basson, P. A., R. M. McCully, S. P. Kruger, J. W. Van Niekerk, E. Young, and V. De Vos. PARASITIC AND OTHER DISEASES OF THE AFRICAN BUFFALO IN THE KRUGER NATIONAL PARK. *Onderstepoort J. Vet. Res.* 37(1): 11-28, illus. 1970. [From Biol. Abstr. 53(2), 1972.] *WR 146: 60*

[Vet. Res. Inst., Onderstepoort, South Africa.] One-hundred randomly-collected buffaloes [*Syncerus caffer*] were autopsied, and tissues and parasites collected for histopathological studies and identification.

Berwick, S. H., and P. A. Jordan. FIRST REPORT OF THE YALE-BOMBAY NATURAL HISTORY SOCIETY STUDIES OF WILD UNGULATES AT THE GIR FOREST, GUJARAT, INDIA. *J. Bombay Nat. Hist. Soc.* 68(2): 412-423 + 1 pl. Aug. 1971. *WR 146: 61*
[Sasan Gir, Gir Sanctuary, Gujarat, India.] *"Axis axis, Boselaphus tragocamelus, Cervus unicolor, Tetracerus quadricornis, gazella gazella,* and *Sus scrofa."*--Courtesy/ Peter A. Jordan.

Brahmachary, R., L. Mallik, and B. Rakshit. AN ATTEMPT TO DETERMINE THE FOOD HABITS OF THE INDIAN RHINOCEROS. *J. Bombay Nat. Hist. Soc.* 67(3): 558-560. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 61*

Broughton, E., F. L. Miller, and L. P. E. Choquette. CUTANEOUS FIBROPAPILLOMAS IN MIGRATORY BARREN-GROUND CARIBOU. *J. Wildl. Dis.* 8(2): 138-140, 2 figs. Apr. 1972. *WR 146: 61*
[Canadian Wildl. Serv., Dep. Environ., Ottawa, Ontario, Canada.] Abstract: The finding of cutaneous fibropapillomas in migratory barren-ground caribou, *Rangifer tarandus groenlandicus* (L.), in Canada is reported for the first time. No transmission studies were carried out to determine if the neoplasms were of viral aetiology.

Caughley, G. DEMOGRAPHY, FAT RESERVES AND BODY SIZE OF A POPULATION OF RED DEER *CERVUS ELAPHUS* IN NEW ZEALAND. *Mammalia* 35(3): 369-383, illus. 1971. [From Biol. Abstr. 53(11), 1972. In English with French summ.] *WR 146: 61*
[Univ. Sydney, Sydney, New South Wales, Australia.]

Caughley, G. THE SEASON OF BIRTH FOR NORTHERN-HEMISPHERE UNGULATES IN NEW ZEALAND. *Mammalia* 35(2): 204-219. June 1971. [From J. Mammal. 53(1, suppl.), 1972. In [English] with French summ.] *WR 146: 61*

Chapman, D. I., and Norma G. Chapman. FURTHER OBSERVATIONS ON THE INCIDENCE OF TWINS IN ROE DEER, *CAPREOLUS CAPREOLUS. J. Zool.* (London) 165(4): 505-509. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 61*
[Equine Res. Sta., Newmarket, Suffolk, England.] A fairly accurate estimate of the number of fetuses a roe deer is likely to carry can be obtained from the number of corpora lutea.

Child, Graham. TICK INFESTATIONS IN HARTEBEEST AND WILDEBEEST IN POOR PHYSICAL CONDITION IN THE KALAHARI. *Arnoldia* (Rhodesia) 5(24): 1-2. 2 Feb. 1972. *WR 146: 61*
"Connachaetes taurinus and *Alcelaphus buselaphus."*

Choquette, L. P. E., E. Broughton, A. A. Currier, J. G. Cousineau, and N. S. Novakowski. PARASITES AND DISEASES OF BISON IN CANADA. III. ANTHRAX OUTBREAKS IN THE LAST DECADE IN NORTHERN CANADA AND CONTROL MEASURES. *Canadian Field Nat.* 86(2): 127-132, 1 fig. Apr.-June 1972. *WR 146: 61*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: The natural history of anthrax is reviewed. Outbreaks of the disease in northern Canada, where more than 1000 bison died from 1962-1971, are discussed. Control measures are described, including vaccination, surveillance of the bison herds, and disposal of carcasses.

Clary, Warren P., and Frederic R. Larson. ELK AND DEER USE ARE RELATED TO FOOD SOURCES IN ARIZONA PONDEROSA PINE. *U.S. For. Serv. Res. Note RM-202.* 4 p., 1 fig. 1971. *WR 146: 61*
Abstract: Elk use within ponderosa pine stands was higher on those areas with higher herbage yields, lower timber basal areas, and some alligator juniper. Long-term deer use appeared to be essentially random.

Curry-Lindahl, Kai. WAR AND THE WHITE RHINOS. *Oryx* 11(4): 263-267. Jan. 1972. *WR 146: 61*
"Ceratotherium simum cottoni."

Daniel, J. C. THE NILGIRI TAHR, *HEMITRAGUS HYLOCRIUS* OGILBY, IN THE HIGH RANGE, KERALA AND THE SOUTHERN HILLS OF THE WESTERN GHATS. *J. Bombay Nat. Hist. Soc.* 67(3): 535-542. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 62*

Davison, G. SOME OBSERVATIONS ON A POPULATION OF NYALA, *TRAGELAPHUS ANGASI* (GRAY) IN THE S.E. LOWVELD OF RHODESIA. *Arnoldia* (Rhodesia) 5(17): 1-8, [1 fig.]. 30 Dec. 1971. *WR 146: 62*

DeArment, Richard. WHEN DISEASE STRIKES LIVESTOCK DON'T BLAME BIG GAME. *Tex. Parks & Wildl.* 3(6): 12-15, illus. June 1972. *WR 146: 62*
Though game animals do contract disease from livestock and vice versa, generally the incidence of abortive diseases in antelope, deer and aoudad sheep is much lower than would ordinarily be expected.

Edgerton, Paul J., and Justin G. Smith. SEASONAL FORAGE USE BY DEER AND ELK ON THE STARKEY EXPERIMENTAL FOREST AND RANGE, OREGON. *U.S. For. Serv. Res. Pap. PNW-112.* 12 p., illus. 1971. *WR 146: 62*
[Pacific NW Forest & Range Exp. Sta., Portland, Oreg.] Seasonal forage use by mule deer *(Odocoileus hemionus hemionus)* and Rocky Mountain elk *(Cervus canadensis nelsoni)* was determined in the three major habitats--open forest, dense forest, and grassland--that characterize the ponderosa pine-Douglas-fir *(Pinus ponderosa-Pseudotsuga menziesii)* vegetation type of the Blue Mountains of eastern Oregon. Forage use in open and dense forest and grassland habitats was greatly influenced by the seasonal availability of preferred forage plants. Habitat ratings showed that open forest was the most important at all seasons; elk sedge was the staple forage plant.

Espmark, Yngve. MOTHER-YOUNG RELATIONSHIP AND ONTOGENY OF BEHAVIOUR IN REINDEER *(RANGIFER TARANDUS L.)*. *Z. Tierpsychol.* 29(1): 42-81, illus. 1971. [From Biol. Abstr. 53(6), 1972. In English with German summ.] *WR 146: 62*
[Univ. Stockholm, Stockholm, Sweden.] Free-ranging herds, and herds in a restricted group of 15 individually recognizable animals (three pluriparous and three primiparous cows, three male yearlings, four male calves and two female calves) were studied. Birth dates for 245 calves were recorded.

Ferrar, Antony A., and Michael A. Kerr. A POPULATION CRASH OF THE REEDBUCK *REDUNCA ARUNDINUM* (BODDAERT) IN KYLE NATIONAL PARK, RHODESIA. *Arnoldia* (Rhodesia) 5(16): 1-19, 2 figs. 10 Nov. 1971. *WR 146: 62*

Geissler, B. AUSWIRKUNG DER BRUNFT AUF DAS WILDPRETGEWICHT BEIM DAMHIRSCH. [THE EFFECT OF RUT ON THE WEIGHT OF GAME IN FALLOW DEER.] *Z. Jagdwiss.* 17(1): 31-33. 1971. [From Biol. Abstr. 53(6), 1972. In German.] *WR 146: 62*
The activity of fallow deer during the rut brings about a sharp decline in the weight of game. It also directly affects the nutrients which the deer stores over a period of time for his next set of antlers and is manifested in younger animals by incomplete antler development. This was demonstrated on 211 deer killed in the Rhein-Main woods area during the 1962-1966 season when there was a great surplus of females. The weight losses of the fallow deer during the 1966-1970 season when a balance existed between males and females were considerably smaller.

Groves, Colin P. SPECIES CHARACTERS IN RHINOCEROS HORNS. *Z. Saugetierkd.* 36(4): 238-252, illus. 1971. [From Biol. Abstr. 53(3), 1972. In English with German summ.] *WR 146: 62*
[Univ. Cambridge, Cambridge, England.]

Harper, James A. ECOLOGY OF ROOSEVELT ELK. *Oreg. Game Comm.* 44 p., illus. 1971. *WR 146: 62*
Topics included are: ecology of Roosevelt elk, movement and associated behavior, reproduction, hunting season, immobilization, transplanting, food habits, use of timberland, big game use of Douglas fir, and management recommendations.

Hebert, Daryl, and I. McTaggart Cowan. NATURAL SALT LICKS AS A PART OF THE ECOLOGY OF THE MOUNTAIN GOAT. *Canadian J. Zool.* 49(5): 605-610. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 63*

Hemming, James E. THE DISTRIBUTION MOVEMENT PATTERNS OF CARIBOU IN ALASKA. *Alaska Dep. Fish & Game, Game Tech. Bull.* no. 1. viii + 60 p., 16 figs. July 1971. *WR 146: 63*

"This report describes the current distribution and movement patterns of caribou [*Rangifer tarandus granti*] as learned from 22 years of federal aid funded studies in Alaska by state and federal biologists."

Hoff, Gerald L., and Daniel O. Trainer. BLUETONGUE VIRUS IN PRONGHORN ANTELOPE. *Am. J. Vet. Res.* 33(5): 1013-1022, 3 figs. May 1972. *WR 146: 63*

"Antilocapra americana."

Holleman, D. F., J. R. Luick, and F. W. Whicker. TRANSFER OF RADIOCESIUM FROM LICHEN TO REINDEER. *Health Phys.* 21(5): 657-666, illus. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 63*

[Univ. Alaska, College.]

Hvidberg-Hansen, H. MANAGEMENT AND UTILIZATION OF THOMSON'S GAZELLES ON A CATTLE AND SHEEP RANCH IN THE KENYA HIGHLANDS. *East African Agric. For. J.* 36 (4): 322-333, illus. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 63*

Jarman, P. J. DIETS OF LARGE MAMMALS IN THE WOODLANDS AROUND LAKE KARIBA, RHODESIA. *Oecologia* (Berlin) 8(2): 157-178. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 63*

[Serengeti Res. Inst., Arusha, Tanzania.] Large mammals that formerly occupied the Kariba basin of the Middle Zambezi Valley have, since it was flooded, been forced to live in a restricted range of deciduous woodland habitats. Feeding records in a study area on the shore of Lake Kariba showed that most herbivore species were browsers, and that only the tree components of their diets varied significantly between vegetation types. The common species varied a proportion of their diets seasonally.

Jarman, P. J. SEASONAL DISTRIBUTION OF LARGE MAMMAL POPULATIONS IN THE UNFLOODED MIDDLE ZAMBEZI VALLEY. *J. Appl. Ecol.* 9(1): 283-299, 1 fig. Apr. 1972. *WR 146: 63*

Summary: Three study visits were made to an unflooded part of the Middle Zambezi Valley to investigate the distribution of populations of large mammals. Distributions of nearly all species were found to vary seasonally, such that greatest use of the flood plain was made at the height of the dry season. Species differed in their occurrence in vegetation types of the studied area, and their use of the vegetation types varied seasonally. The differences between the species in their distributions afforded them some degree of ecological separation. Breeding and non-breeding sections of populations often differed in their distributions and preferences for vegetation types. In general, non-breeding sections were more evenly dispersed than breeding sections, showing less emphatic preferences for vegetation types. It was concluded that the inundation of the flood plain in the Lake Kariba area of the valley must have deprived many herbivores of formerly important dry season habitats.

Kelsall, John P., Vernon D. Hawley, and Donald C. Thomas. DISTRIBUTION AND ABUNDANCE OF MUSKOXEN [*OVIBOS MOSCHATUS*] NORTH OF GREAT BEAR LAKE. *Arct. J. Arct. Inst. N. Am.* 24(3): 157-161. 1971. [From Biol. Abstr. 53(5), 1972. In English with French and Russian summ.] *WR 146: 63*

Kistchinsky, A. A. [THE MODERN STATE OF THE WILD REINDEER POPULATION ON THE NOVOSIBIRSKY ISLANDS.] *Zool. Zh.* 50(1): 117-125. Jan. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Russian with English summ.] *WR 146: 63*

Kraemer, Augustin, and Arnold Aeschbacher. ZUM FLUCHTVERHALTEN DES STEINWILDES *(CAPRA IBEX)* IM OBERENGADIN, SCHWEIZ. [ON THE FLIGHT BEHAVIOUR OF IBEX *(CAPRA IBEX)* IN OBERENGADIN, SWITZERLAND.] *Saeugetierkd. Mitt.* 19(2): 164-171. 1971. [From Biol. Abstr. 53(4), 1972. In German with English summ.] *WR 146: 64*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Lincoln, G. A. PUBERTY IN A SEASONALLY BREEDING MALE, THE RED DEER STAG *(CERVUS ELAPHUS L.)*. *J. Reprod. Fert.* (Oxford) 25(1): 41-54 + 2 pls. Apr. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 64*

Lobachev, V. S., and V. M. Smirin. [HORNS IN FEMALES OF THE SAIGA AND THE PERSIAN GAZELLE.] *Zool. Zh.* 49(9): 1421-1423. Sept. 1970. [From J. Mammal. 53 (1, suppl.), 1972. In Russian with English summ.] *WR 146: 64*

McDowell, Jack, and Gerald Gates. AN HISTORIC WILDLIFE TRADE / ANTELOPE FOR DESERT BIGHORNS. *N. Mex. Wildl.* 17(3): 16-21, illus. May-June 1972. *WR 146: 64*
The story of the agreement between the New Mexico Department of Game and Fish and the Federal Mexican Government to exchange pronghorn antelope *(Antilocapra americana)* for desert bighorn sheep *(Ovis canadensis mexicana)* is told here in two separate accounts. In "The Trade" Jack McDowell details the history of the trade from start to finish. Gerald Gates in "The Sheep Capture" gives an account of the sheep capture including the capture methods and the reactions of the animals.

Miller, Frank L. ERUPTION AND ATTRITION OF MANDIBULAR TEETH IN BARREN-GROUND CARIBOU. *J. Wildl. Manage.* 36(2): 606-612, 2 figs. Apr. 1972. *WR 146: 64*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: The mandibular tooth rows of 356 barren-ground caribou *(Rangifer tarandus groenlandicus)* were examined to determine at what ages their incisiform and molariform teeth erupt. The approximate ages of eruption were: *i*1, 9 to 13 months; *i*2, 11 to 15 months; *i*3, 11 to 15 months; *c*1, 11 to 16 months; *p*2, 21 to 28 months; *p*3, 21 to 28 months; *p*4, 21 to 28 months; *m*1, 3 to 5 months; *m*2, 10 to 15 months; and *m*3, 15 to 28 months. All permanent mandibular teeth were erupted by 29 months of age. The degree of attrition was recorded from the various age-classes that were examined.

Monfort, Alain. DENSITES, BIOMASSES ET STRUCTURES DES POPULATIONS D'ONGULES SAUVAGES AU PARC DE L'AKAGERA (RWANDA). [DENSITIES, BIOMASSES AND POPULATION STRUCTURES OF WILD UNGULATES IN THE AKAGERA NATIONAL PARK, RWANDA.] *Terre Vie* 26(2): 216-256, 4 figs. Apr.-June 1972. In French with English summ.
WR 146: 64
[Univ. Liège, Liège, Belgium.] Data on 13 spp.

Morrison, J. A. MORPHOLOGY OF CORPORA LUTEA IN THE UGANDA KOB ANTELOPE, *ADENOTA KOB THOMASI* (NEUMANN). *J. Reprod. Fert.* 26: 297-305, 12 figs. on 2 pls. 1971. *WR 146: 64*
[Okla. Coop. Wildl. Res. Unit, Stillwater.]

Morrison, J. A., and H. K. Buechner. REPRODUCTIVE PHENOMENA DURING THE *POST PARTUM*-PRECONCEPTION INTERVAL IN THE UGANDA KOB. *J. Reprod. Fert.* 26: 307-317. 1971. *WR 146: 64*
[Okla. Coop. Wildl. Res. Unit, Stillwater.]

Niethammer, Guenther. DIE GEMSEN NEUSEELANDS. [THE CHAMOIS FROM NEW ZEALAND.] *Z. Saeugetierkd.* 36(4): 228-238, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 64*
[Zool. Forsch.-Inst. Mus. Alexander Koenig, Adenauerallee 150-164, Bonn, Germany.]

Palmer, A. W., E. Best, and T. Shepherd. THE STATUS OF TSESSEBE *DAMALISCUS LUNATUS* IN RHODESIA. *Rhodesia Sci. News* 6(5): 146-151, illus. May 1972. *WR 146: 65*

The following land categories were surveyed by questionnaire: National Parks and Game Reserves, Tribal Trust Lands, Forestry Commission Lands and European ranch and farm lands.

Petersen, J. C. Briand, and R. L. Casebeer. A BIBLIOGRAPHY RELATING TO THE ECOLOGY AND ENERGETICS OF EAST AFRICAN LARGE MAMMALS. *East African Wildl. J.* 9. p. 1-23. Aug. 1971. *WR 146: 65*

[P.O. Box 30559, Nairobi, Kenya.] A reference to works contributing to an understanding of energy flow through large mammals in East African ecosystems. Divided in two parts, the topics are compiled according to their application to various segments as they appear in an energy-flow model. The first part indicates papers on pasture utilization, value of foodstuffs, animal numbers and distribution, population dynamics and secondary production. The second part assembles references dealing with individual animal species, stratifying them according to the subjects of ecology, food habits and nutrient utilization, population dynamics and growth.--From summ.

Poldsam, H. [WILD BOARS IN THE MAHTRA GAME MANAGEMENT AND HUNTING AREA.] *Eesti Loodus* 1: 13-14. Jan. 1971. [From J. Mammal. 53(1, suppl.), 1972. In Estonian.] *WR 146: 65*

Pruitt, W. O. SCANDINAVIAN-CANADIAN FIELD WORKSHOP ON *RANGIFER*-SNOW ECOLOGY. *Arctic* (Quebec) 24(2): 145. June 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 65*

Reimers, Eigil. GROWTH IN DOMESTIC AND WILD REINDEER IN NORWAY. *J. Wildl. Manage.* 36(2): 612-619, 3 figs. Apr. 1972. *WR 146: 65*

[Norwegian State Game Res. Inst., Vollebekk, Norway.] Abstract: Growth is compared between two wild reindeer *(Rangifer tarandus)* populations and also between these two populations and the now-dispersed Trio domestic herd from which the two wild populations were derived. The two wild populations are located in North Ottadalen, a near-virgin area, and South Ottadalen, an area that was partially heavily grazed. Both areas were utilized by the Trio herd. Intensive herding of the Trio animals is deemed responsible for their 23 to 43% lower dressed weights when compared with the South Ottadalen herd. The longer diastema lengths of the North Ottadalen population, when compared with both the South Ottadalen and the Trio populations, reflect the difference in range quality between the North and South Ottadalen areas.

Rhodesian Department of National Parks and Wildlife Management. BLACK RHINOS MOVED 600 MILES TO SANCTUARY. *African Wildl.* 25(2): 54-57, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 65*

"Diceros bicornis."

Ritchie, Brent W. THE LIFE AND HABITS OF MOOSE IN EASTERN IDAHO. *Idaho Wildl. Rev.* 24(5): 3-7, illus. Mar.-Apr. 1972. *WR 146: 65*

Early records, habitat preference and food habits, reproduction, and moose hunting in Idaho.

Rowe-Rowe, D. T., and R. C. Bigalke. OBSERVATIONS ON THE BREEDING AND BEHAVIOUR OF BLESBOK. *Lammergeyer* no. 15. p. 1-14, 7 figs. Mar. 1972. *WR 146: 65*

[Box 662, Pietermaritzburg, Natal, South Africa.] Blesbok, *Damaliscus dorcas phillipsi*, were observed closely for six years in Queen Elizabeth Park Nature Reserve. The main herd was a harem and nursery herd. Young males were chased from the herd at or about the time of lambing, usually by the dominant male, but parental females were observed chasing during one season. Yearling females were not chased from the herd. Females lambed for the first time at the age of three

years. A nineteen-month male was successfully mated with two adult females. The young's horns emerge during the second month and start to curve backwards when the blesbok is about twelve months old. The black forehead becomes whitish at six or seven months, and normal adult coloration is attained when the animal is three years old.--From summ.

Sägesser, Hannes. [RELATIONS BETWEEN ANTLERS AND FRONTAL BONES IN THE ROE DEER *(CAPREOLUS C. CAPREOLUS* L.).] *Zool. Anz.* (Leipzig) 185(1-2): 9-19. July-Aug. 1970. [From J. Mammal. 53(1, suppl.), 1972. In German with English summ.] *WR 146: 66*

Sankhala, K. S., and J. H. Desai. REPRODUCTIVE BEHAVIOUR OF BROWANTLERED DEER. *J. Bombay Nat. Hist. Soc.* 67(3): 561-565. Dec. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 66*

Schiemann, B., B. Gwamaka, and M. Kalunda. PATHOGENICITY FOR A BUFFALO *(SYNCERUS CAFFER)* OF ALLERTON-TYPE HERPES VIRUS ISOLATED FROM A TANZANIAN BUFFALO. *J. Wildl. Dis.* 8(2): 141-145, 1 fig. Apr. 1972. *WR 146: 66*

[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.] Abstract: A buffalo *(Syncerus caffer)* was inoculated intravenously and intradermally with a high dose of Allerton-type herpes virus isolated from a sick buffalo during an outbreak of a disease in buffaloes in Serengeti National Park, Tanzania, in 1969. The animal reacted severely and generalized skin nodules as well as oral and nasal lesions were observed. Viraemia was detected and the virus was isolated from swabs and also from ticks which were fed on the animal during the viraemic phase. The buffalo produced neutralizing antibody and recovered after a long illness. It would therefore appear that under certain conditions the Allerton-type herpes virus can be of high pathogenicity for buffaloes.

Schroeder, W. UNTERSUCHUNGEN ZUR OEKOLOGIE DES GAMSWILDES *(RUPICAPRA RUPICAPRA* L.) IN EINEM VORKOMMEN DER ALPEN: I. [STUDIES ON THE ECOLOGY OF THE CHAMOIS *(RUPRICAPRA RUPRICAPRA* L.) IN A POPULATION IN THE ALPS: I.] *Z. Jagdwiss.* 17(3): 113-168, illus. 1971. [From Biol. Abstr. 53(11), 1972. In German.] *WR 146: 66*

[Univ. Goettingen, Goettingen, Germany.] Field observations carried out from Aug. 1968 to Oct. 1969 on a chamois population in the Austrian Alps are reported. Social organization, weight development and changes throughout the year, choice of a habitat, including seasonal movements, horn growth, health, reproduction and mortality are included in the discussion. For comparison, other populations were observed.

Sheehan, J. A NEW POLICY FOR THE TULE ELK. *Outdoor Calif.* 32(1-2): 17. Apr. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 66*

Sinha, N. K. SOME NOTES ON THE SWAMP DEER *CERVUS DUVAUCELI* CUVIER, 1823 (FAM: CERVIDAE: MAMMALIA) OF INDIA. *Indian Sci. Congr. Assoc. Proc. Session* 57 (3): 112. 1970. [From J. Mammal. 53(1, suppl.), 1972. Abstract only.] *WR 146: 66*

Spratt, D. M., and D. E. Moorhouse. *ONCHOCERCA SWEETAE* SP. NOV. (NEMATODA: FILARIOIDEA), A PARASITE OF THE WATER BUFFALO *(BUBALUS BUBALIS)* FROM NORTHERN AUSTRALIA. *Zool. Anz.* (Leipzig) 186(1-2): 147-153. Jan.-Feb. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 66*

Staines, B. W. A POPULATION STUDY OF RED DEER IN GLEN DYE, NORTH-EAST SCOTLAND. *Mamm. Rev.* (London) 1(3): 53. Aug. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 66*

Stainthorpe, Humphrey L. OBSERVATIONS ON CAPTIVE ELAND IN THE LOTENI NATURE RESERVE. *Lammergeyer* no. 15. p. 27-38, 3 figs. Mar. 1972. *WR 146: 66*

[P.O. White River, Transvaal, South Africa.] Summary: Observations on a herd of eland domesticated in Loteni Nature Reserve, Natal, were made over a 27

month period. The herd was started with wild caught calves. During the period of observation 16 calves were born in domestication. Details of feeding, parasite treatment, calving intervals and gestation periods are given. The effects of castration and dehorning are also discussed.

Stewart, D. R. M. SURVIVAL DURING DIGESTION OF EPIDERMIS FROM PLANTS EATEN BY UNGULATES. *Rev. Zool. Bot. Africaines* 82(3-4): 343-348. 30 Dec. 1970. *WR 146: 67*

[Kenya Game Dep., P.O. Box 241, Nairobi, Kenya.] "Impala and domestic cattle."

Uhazy, L. S., and J. C. Holmes. HELMINTHS OF THE ROCKY MOUNTAIN BIGHORN SHEEP IN WESTERN CANADA. *Canadian J. Zool.* 49(4): 507-512. Apr. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 67*

Uloth, Walter. *CAPRINI* SIMPSON, 1945, IN UEBERSEE. [*CAPRINI* SIMPSON, 1945, OVERSEAS.] *Saeugetierkd. Mitt.* 19(3): 198-202. 1971. [From Biol. Abstr. 53 (11), 1972. In German with English summ.] *WR 146: 67*

[Rhoen, Kreis Meiningen, Seeba, Germany.] Literature review to all introductions of *Caprini* overseas is given.

Uloth, Walter. VORKOMMEN DES EUROPAEISCHEN DAMHIRSCHES, *CERVUS (DAMA) DAMA* (LINNÉ, 1758), AUSSERHALB SEINES NATUERLICHEN VERBREITUNGSGEBIETS. [OCCURRENCE OF THE EUROPEAN FALLOW DEER, *CERVUS (DAMA) DAMA* (LINNÉ, 1758), OUTSIDE OF ITS NATURAL AREA OF DISTRIBUTION.] *Saeugetierkd. Mitt.* 19(3): 202-206, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 67*

[Rhoen, Kreis Meiningen, Seeba, Germany.] A review of the literature on the introduction of *Cervus (Dama) dama* into Africa, Australia, New Zealand, North and South America is given, and the status of the Nebraska population is discussed.

DEER (Odocoileus)

Anderson, Allen E., Dean E. Medin, and David C. Bowden. MULE DEER FECAL GROUP COUNTS RELATED TO SITE FACTORS ON WINTER RANGE. *J. Range Manage.* 25(1): 66-68. Jan. 1972. *WR 146: 67*

[Colo. Div. Game, Fish & Parks, Fort Collins.] Highlight: Measurements of 32 site factors on 931, 100 ft^2, circular plots systematically distributed among lower, middle and upper Cache la Poudre, Colorado winter range study areas of about 500 surface acres each, were related to cumulative mule deer *(Odocoileus hemionus)* fecal groups counted on those plots (1963-65). Single and multiple linear regression and Chi-square analyses indicated that vegetative measurements, particularly antelope bitterbrush *(Purshia tridentata)* parameters, were the site factors most closely related to fecal group counts. These site factors accounted for about 10-13 percent in single linear regressions, and 8-20 percent in multiple linear regressions of the significant variation (R^2) in fecal group counts.

Anderson, A. E., D. E. Medin, and D. C. Bowden. BLOOD SERUM ELECTROLYTES IN A COLORADO MULE DEER POPULATION. *J. Wildl. Dis.* 8(2): 183-190. Apr. 1972. *WR 146: 67*

[Colo. Div. Game, Fish & Parks, Fort Collins.] *"Odocoileus hemionus."*

Anderson, Allen E., Dean E. Medin, and David C. Bowden. INDICES OF CARCASS FAT IN A COLORADO MULE DEER POPULATION. *J. Wildl. Manage.* 36(2): 579-594, 10 figs. Apr. 1972. *WR 146: 67*

[Colo. Div. Game, Fish & Parks, Fort Collins.] Bled carcass weight, eviscerated carcass weight, kidney fat index, percentage of femur marrow fat, carcass density, percentage of carcass fat, and depth of back fat were measured in Rocky Mountain mule deer *(Odocoileus hemionus hemionus)* that were collected at approximate weekly intervals from seasonal ranges within the Cache la Poudre River drainage, 1961-65.--From abstr.

Anderson, Allen E., Dean E. Medin, and David C. Bowden. MULE DEER NUMBERS AND SHRUB YIELD-UTILIZATION ON WINTER RANGE. *J. Wildl. Manage.* 36(2): 571-578, 3 figs. Apr. 1972. *WR 146: 68*

[Colo. Div. Game, Fish & Parks, Fort Collins.] Abstract: Counts of mule deer *(Odocoileus hemionus)* fecal groups on 960, 100-ft^2 circular plots located on three north-central Colorado winter range study areas of about 500 acres each, were related to mean forage yields in pounds (ovendry) per acre and mean utilization per plot (percentage weight) of true mountain mahogany *(Cercocarpus montanus)*, antelope bitterbrush *(Purshia tridentata)*, and big sagebrush *(Artemisia tridentata)* sampled on those plots from 1962 to 1965. Scatter diagrams and regression analysis revealed no significant *(P > 0.05)* correlations between the indices of deer numbers and mean yield or utilization of true mountain mahogany and antelope bitterbrush. Mean yield and mean utilization were significantly *(P< 0.05)* correlated *(r= -0.90)* for true mountain mahogany but not for antelope bitterbrush *(r = -0.54)*. Inadequate sample sizes precluded similar analysis of big sagebrush.

Anderson, Allen E., Dean E. Medin, and David C. Bowden. TOTAL SERUM PROTEIN IN A POPULATION OF MULE DEER. *J. Mammal.* 53(2): 384-387. May 1972. *WR 146: 68*

[Colo. Div. Game, Fish & Parks, Fort Collins.]

Bartmann, Wolf. SUPERFETATION BEIM VIRGINIA-HIRSCH *(ODOCOILEUS VIRGINIANUS* ZIMMERMANN 1780)? [SUPERFETATION IN THE VIRGINIA DEER *(ODOCOILEUS VIRGINIANUS* ZIMMERMANN 1780)?] *Z. Saugetierkd.* 36(4): 200-201. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 68*

[Muelheimer St. 273, Zoo Duisburg, Duisburg, Germany.] A doe from the Duisberg Zoo (Germany) had one fawn June 27, 1970 and twin fawns on Sept. 9, 1970. Histological study of the ovaries of this doe was not possible. An embryo from the first embryo generation may have delayed or partially interrupted development due to late nidation. All three fawns were normally developed.

Bennett, C. L., Jr., L. J. Hawn, D. H. Jenkins, and L. A. Ryel. BACKGROUND MATERIAL HELPFUL IN UNDERSTANDING THE MICHIGAN SYSTEM FOR: I. ESTIMATING DEER *ODOCOILEUS VIRGINIANUS* NUMBERS. II. ESTIMATING THE ANNUAL KILL OF DEER BY HUNTERS. III. MEASURING THE NUMBER OF DEER LOST BY STARVATION, ILLEGAL IN-SEASON KILL, ACCIDENTS, PREDATION, DISEASE, ETC. AND IV. THE RESEARCH TRIANGLE AUDIT. *Mich. Dep. Nat. Resour. Res. & Dev. Rep.* no. 52 A. 18 p. May 1972. *WR 146: 68*

Brokx, P. A. THE SUPERIOR CANINES OF *ODOCOILEUS* AND OTHER DEER. *J. Mamal.* 53(2): 359-366. May 1972. *WR 146: 68*

[Univ. Waterloo, Ontario, Canada.]

Cappucci, D. T., Jr., and W. M. Longhurst. RABIES IN A DEER. *Calif. Fish Game* 58(2): 141-144. Apr. 1972. *WR 146: 68*

[Calif. Dep. Public Health, 2151 Berkeley Way, Berkeley.] Abstract: Rabies was diagnosed in a Columbian black-tailed deer *(Odocoileus hemionus columbianus)*. Two persons subsequently received postexposure antirabies treatment. The case documented herein represents California's fifth reported episode of rabies in deer.

Carpenter, James W., J. Clay Freeny, and Clark S. Patton. OCCURRENCE OF *DEMODEX* OWEN 1843 ON A WHITE-TAILED DEER FROM OKLAHOMA. *J. Wildl. Dis.* 8(2): 112-114, 3 figs. Apr. 1972. *WR 146: 68*

[Okla. State Univ., Stillwater.] Abstract: The occurrence of *Demodex* in a new host, the white-tailed deer *(Odocoileus virginianus)*, is described. The mite infestation produced a diffuse alopecia on the posterior half of the body.

Doster, Gary L. A DEVICE TO AID IN EXAMINING THE SMALL INTESTINE OF DEER FOR HELMINTH PARASITES. *J. Wildl. Dis.* 8(2): 163-164, 2 figs. Apr. 1972. *WR 146: 68*

[Univ. Ga., Athens.] Abstract: An implement is described which facilitates endoparasite studies involving white-tailed deer *(Odocoileus virginianus)*. This

device significantly reduces the time required for helminth parasite collections from the small intestines of these animals and appears to have similar potential for other species. It also increases the efficiency with which abdominal worms *(Setaria yehi)* and blood flukes *(Heterobilharzia americana)* can be found.

Gladfelter, Lee. DEER IN IOWA--1971. *Iowa Wildl. Res. Bull.* no. 1. 19 p., 3 figs. Apr. 1972. *WR 146: 69*
Data collected on white-tailed deer in Iowa during 1971 and a discussion on the outlook of the deer population for 1972.--From intro.

Halls, Lowell K., Jack D. McCarty, and Harry V. Wiant. RELATIVE BROWSING OF 16 SPECIES BY WHITE-TAILED DEER. *J. Range Manage.* 23(2): 146-147. Mar. 1970. *WR 146: 69*
[Southern Forest Exp. Sta., Nacogdoches, Tex.] Highlight: Among browse plants of 16 species in an east Texas pine-hardwood forest, winged elm was eaten most by white-tailed deer in spring. Alabama supplejack was palatable from spring through fall, and saw greenbrier was eaten all year. Even though they were plentiful, utilization was light for flowering dogwood, grape, poison-ivy, and rusty blackhaw. American beautyberry was browsed mainly in the fall. Yellow jessamine was eaten more than any other browse species during the winter.

Harder, John Dwight. THE APPLICATION OF AN ANTIFERTILITY AGENT IN THE CONTROL OF A WHITE-TAILED DEER POPULATION. *Ph.D. thesis, Ohio State Univ.* 175 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 69*

Jackson, Rodney M., Marshall White, and Frederick F. Knowlton. ACTIVITY PATTERNS OF YOUNG WHITE-TAILED DEER FAWNS IN SOUTH TEXAS. *Ecology* 53(2): 262-270, 5 figs. Early Spring 1972. *WR 146: 69*
[Univ. Calif., Berkeley.] The activity of 27 young white-tailed deer *(Odocoileus virginianus)* fawns was studied on the Welder Wildlife Refuge in South Texas. We attached motion-sensitive radio-transmitters to 15 male and 12 female fawns, 3-12 days old, and monitored their activity for as long as 9 weeks. These fawns primarily were diurnal, although most were active for short periods once or twice a night. The amount and timing of activity of each fawn varied considerably; however, total activity increased with age as a fawn became stronger and more agile. Males were more active than females during daytime and in total at all ages, but females were more active at night.--From abstr. Courtesy/ Paul A. Stewart.

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[Bakersfield Coll., Bakersfield, Calif.] Abstract: The effects of removing the understory trees and debris in a giant sequoia *(Sequoiadendron giganteum)* grove on the summer forage available to mule deer *(Odocoileus hemionus californicus)* were studied. On areas treated by cutting, piling, and burning, the browse and other forage was more abundant, more closely utilized, and more nutritious than on untreated control areas. The vegetational responses to the forest treatment reflected the increased sunlight and openness of the canopy.

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[Rocky Mountain Forest & Range Exp. Sta., Fort Collins, Colo.] Abstract: Wild does are trapped in winter and held until after fawning. Fawns are left with the doe at least 12 hours to assure feeding of colostrum, but less than 24 hours to prevent development of wildness. Reliance on the human trainer develops through bottle feeding and frequent contact. Initial training for field use requires 4 to 6 weeks, but continuous rehearsal is necessary.

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[Univ. Wis., Madison.] Abstract: The deer ked, *Lipoptena mazamae*, was the most prevalent ectoparasite (64%) detected on white-tailed deer *(Odocoileus virginianus)* from the Welder Wildlife Refuge in south Texas. Prevalence and abundance of keds were highest on deer living in areas of "dense" vegetation or sandy soils. Among ecologic factors studies, flooding appeared to significantly reduce the prevalence of all keds and numbers of unfed adults on deer. Transmission of keds from dam to offspring was suggested.

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[U.S. Forest Service, San Francisco, Calif.] Abstract: A cooperative deer study was conducted by the California Department of Fish and Game and the U.S. Forest Service on the summer and winter ranges of the Mineral King herd, Tulare County, from July, 1969, to July, 1970. The key winter range was located and mapped during the 1969-70 winter by observation of marked deer. In July and August of 1969, 48 deer were trapped in Mineral King on the summer range. Bells were placed on 43 adult does and three were also fitted with radio telemeters. Four bucks and one fawn were ear tagged. Deer began moving to the winter range in early October when the first storm occurred. The distance traveled was from 10 to 18 miles. In 1970 the deer returned to the summer range, mostly during May. Radio monitoring of a doe showed she made the return trip from the winter to the summer range in 3 days.

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"Odocoileus hemionus."

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[Univ. Ga., Athens.] Abstract: A vise-like apparatus consisting of movable plates with "teeth", which can be clamped to a table top, has been found to be of value as an aid in securing the heads of white-tailed deer *(Odocoileus virginianus)* for examination for meningeal worms *(Pneumostrongylus tenuis)*. This apparatus also has been valuable as an adjunct to necropsy procedures when studying various types of cranial injuries, cerebral abscesses, and for examining the turbinates for nasal bots *(Cephenemyia phobifera)*.

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[Canadian Wildl. Serv., Highway 31, Ottawa, Ontario, Canada.] *"Arctocephalus pusillus doriferus* and *A. forsteri."*

Terhune, John M., and K. Ronald. THE AUDIOGRAM AND CALLS OF THE HARP SEAL *(PAGOPHILUS GROENLANDICUS)* IN AIR. *Proc. Seventh Ann. Conf. Biol. Sonar Diving Mamm.* 7: 133-140. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 75*

Tikhomirov, E. A. [CASES OF EATING BIRDS BY HARBOR SEAL.] *Tikhookeansk. Nauk-Issled. Inst. Rybonogo Khozialst. Okeanogr. Isv.* (Vladivostok) 70: 249-250. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 75*

Tikhomirov, E. A. [ON REPRODUCTION OF SEALS OF FAMILY PHOCIDAE.] *Tikhookeansk. Nauk-Issled. Inst. Rybonogo Khozialst. Okeanogr. Isv.* (Vladivostok) 70: 247-249. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Russian.] *WR 146: 75*

Tobayama, T., S. Uchida, and M. Nishiwaki. [A WHITE BELLIED RIGHT WHALE DOLPHIN CAUGHT IN THE WATERS OFF IBARAGI, JAPAN.] *Univ. Tokyo Ocean Res. Inst. Collected Reprints* 8: 648-657. 1970. [From J. Mammal. 53(1, suppl.), 1972. In Japanese with English summ.] *WR 146: 75*

Van Horn, D. R., and B. E. Baker. SEAL MILK. II. HARP SEAL *(PAGOPHILUS GROENLANDICUS)* MILK: EFFECTS OF STAGE OF LACTATION ON THE COMPOSITION OF THE MILK. *Canadian J. Zool.* 49(8): 1085-1088. Aug. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 75*

White, D., N. Cameron, P. Spong, and J. Bradford. VISUAL ACUITY OF THE KILLER WHALE. *Exp. Neurol.* 32(2): 230-236. Aug. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 76*

Whittow, G. C., C. A. Ohata, and D. T. Matsuura. BEHAVIORAL CONTROL OF BODY TEMPERATURE IN THE UNRESTRAINED CALIFORNIA SEA LION. *Commun. Behav. Biol.* 6(2)A: 87-91. Aug. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 76*

Wilson, T. M., A. D. Boothe, and N. F. Cheville. SEALPOX FIELD SURVEY. *J. Wildl. Dis.* 8(2): 158-160, 1 fig. Apr. 1972. *WR 146: 76*
[Ontario Dep. Agric. & Food, Guelph, Ontario, Canada.] Abstract: The light microscopic demonstration of eosinophilic intracytoplasmic inclusion bodies in epithelial cells and the electron microscopic demonstration of poxvirus in these inclusions has shown that sealpox occurs in free-living California sea lions, *Zalophus californianus*. This is the first evidence of a poxvirus skin infection in free-living California sea lions.

Wilson, T. M., N. F. Cheville, and A. D. Boothe. SEALPOX QUESTIONNAIRE SURVEY. *J. Wildl. Dis.* 8(2): 155-157. Apr. 1972. *WR 146: 76*
[Ontario Dep. Agric. & Food, Guelph, Ontario, Canada.] Abstract: Employing skin biopsies fixed in various ways, received in response to a questionnaire survey, sealpox was confirmed by light and electron microscopic examination in five captive California sea lions, *Zalophus californianus*, one free-living harbor seal *Phoca vitulina* and one South American sea lion, *Otaria byronia*. A nodular skin condition of unknown etiology is common among captive California sea lions, captive Stellar sea lions and captive elephant seals. A probable source of sealpox in aquaria and zoological gardens is infected animals captured in the wild.

Wilson, T. M., and I. Poglayen-Neuwall. POX IN SOUTH AMERICAN SEA LIONS *(OTARIA BYRONIA)*. *Canadian J. Med.* 35: 174-177. 1971. [From J. Mammal. 53 (1, suppl.), 1972.] *WR 146: 76*

OTHER MAMMALS

Kavanau, J. Lee, and Judith Ramos. TWILIGHTS AND ONSET AND CESSATION OF CARNIVORE ACTIVITY. *J. Wildl. Manage.* 36(2): 653-657, 2 figs. Apr. 1972. *WR 146: 76*
[Univ. Calif., Los Angeles.] Abstract: The average emergence times of captive genets *(Genetta genetta)*, kinkajous *(Potos flavus)*, and ringtails *(Bassariscus astutus)* varied from one to 36 minutes after sunset. The times were highly consistent for some individuals, with mean deviations in the range of only 3.6 to 4.6 minutes. Retiring times often were long before sunrise--as long as 260 minutes--and generally were much more variable. One can interpret this behavior as adaptive both for predation on smaller animals and for the avoidance of falling prey to larger animals.

McKay, George Michael. BEHAVIOR AND ECOLOGY OF THE ELEPHANT IN SOUTHEASTERN CEYLON. *Ph.D. thesis, Univ. Md.* 421 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 76*
Three populations of Asiatic elephant *(Elephas m. maximus)* were studied over a period of 2.75 years in Southeastern Ceylon. In the major study area, around the Gal Oya National Park, the population was estimated to be 260-300 elephants.

Mohamed Khan Bin Momin, Khan. POPULATION AND DISTRIBUTION STUDIES OF PERAK ELEPHANTS. *Malayan Nat. J.* 23(1): 7-14. 1969/1970. [From Biol. Abstr. 53(4), 1972.] *WR 146: 76*
[Pejabat Pelindong Margasetva Kanan, Negeri Perak, Malaysia.]

Mueller-Dombois, Dieter. CROWN DISTORTION AND ELEPHANT DISTRIBUTION IN THE WOODY VEGETATIONS OF RUHUNA NATIONAL PARK, CEYLON. *Ecology* 53(2): 208-226, 14 figs. Early Spring 1972. *WR 146: 77*
[Univ. Hawaii, Honolulu.] Crown distortion was prevalent among early seral rather than late seral species and stands, indicating that elephants *(Elephas maximus)* are more strongly associated with disturbed and developing vegetation than with late seral or near-climax, evergreen, sclerophyll monsoon forests. Elephants were scattered in all woody vegetation types in the dry season; in the wet season they were more concentrated in areas of greater vegetation diversity, with ready access to short-grass cover. Year-round centers of activity were in open *Feronia* (woodapple) scrub stands on grumusols and in evergreen forest-scrub on dunes.--Courtesy/ Paul A. Stewart.

Munday, B. L. MYONECROSIS IN FREE-LIVING AND RECENTLY-CAPTURED MACROPODS. *J. Wildl. Dis.* 8(2): 191-192, 1 fig. Apr. 1972. *WR 146: 77*
[Mt. Pleasant Lab., P.O. Box 46, Launceston South, Tasmania, Australia.] Abstract: Necrosis of skeletal muscles was found in a pademelon *(Thylogale billardierii)* and two Bennett's wallabies *(Macropus rufogrisea)*. The possible involvement of over-exertion in precipitating the condition is discussed.

Nicholls, D. G. DAILY AND SEASONAL MOVEMENTS OF THE QUOKKA, *SETONIX BRACHYURUS* (MARSUPIALIA), ON ROTTNEST ISLAND. *Australian J. Zool.* 19(9): 215-216. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 77*
[Timbertop P.B., Mansfield, Victoria, Australia.]

Pages, Elisabeth. SUR L'ÉCOLOGIE ET LES ADAPTATIONS DE L'ORYCTÉROPE ET DES PANGOLINS SYMPATRIQUES DU GABON. [ON THE ECOLOGY AND ADAPTATION OF SYMPATRIC *ORYCTEROPUS* AND PANGOLINS IN GABON.] *Biol. Gabonica* 6(1): 27-92, illus. 1970. [From Biol. Abstr. 53(6), 1972. In French with English summ.] *WR 146: 77*
[Mission Biol., Bruncy, Gabon.]

Pine, Ronald H. A NEW SUBGENUS AND SPECIES OF MURINE OPOSSUM (GENUS *MARMOSA*) FROM PERU. *J. Mammal.* 53(2): 279-282, 1 fig. May 1972. *WR 146: 77*
[Natl. Mus. Nat. Hist., Washington, D.C.] *"Marmosa (Stegomarmosa) andersoni."*

Roff, C., and S. Jackson. THE KANGAROO INDUSTRY IN QUEENSLAND: SECOND SUPPLEMENT, 1966-1970. *Queensland J. Agric. Anim. Sci.* 28(2/3): 159-165. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 77*
[Div. Plant Ind., Brisbane, Queensland, Australia.]

Russell, Eleanor M. CHANGES IN BEHAVIOUR WITH TEMPERATURE IN THE RED KANGAROO, *MEGALEIA RUFA*. *Australian J. Zool.* 19(3): 207-213. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 77*
[Univ. New South Wales, Sydney, Australia.]

Russell, Eleanor M., and B. J. Richardson. SOME OBSERVATIONS ON THE BREEDING, AGE STRUCTURE, DISPERSION AND HABITAT OF POPULATIONS OF *MACROPUS ROBUSTUS* AND *MACROPUS ANTILOPINUS* (MARSUPIALIA). *J. Zool.* (London) 165(1): 131-142, illus. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 77*
[Univ. New South Wales, Sydney, Australia.]

Sharman, G. B. MANAGEMENT OF KANGAROOS. *Australian Zool.* 16(1): 73-82. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 77*

Shcherbak, N. N. [ECOLOGY OF *EREMIAS PRZEWALSKII* STR.] *Vestn. Zool.* 5(4): 58-66, illus. 1971. [From Biol. Abstr. 53(9), 1972. In Russian with English summ.] *WR 146: 77*
[Acad. Sci. Ukr. SSR, Kiev, USSR.]

OTHER MAMMALS--Continued

Thomas, I. M., and L. B. Delroy. PEARSON ISLAND EXPEDITION 1969: IV. THE PEARSON ISLAND WALLABY *(PETROGALE PEARSONI)*. *Trans. Roy. Soc. S. Australia* 95 (3): 143-145. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 78*
[Univ. Adelaide, Adelaide, South Australia.]

Yalden, D. W., and G. R. Hosey. FERAL WALLABIES IN THE PEAK DISTRICT. *J. Zool.* (London) 165(4): 513-520, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 78*
[Univ. Manchester, Manchester, England.] Information currently available on sightings of wallabies (genus *Macropus*) in Peak District, England and observations on their behavior, coloration and plant food diet are presented. The wallaby should be included in the list of British Mammals.

BIRDS--GENERAL

Bachrach, Jerzy, and Teresa Poniatowska, translators. ACTA ORNITHOLOGICA, 11(1-5, 9, 12, 13), 1968. *Published for Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Foreign Scientific Publications Dep. of the National Center for Scientific, Technical, and Economic Information, Warsaw, Poland.* TT 70-55118. 134 p. 1972. Polish original published by Zoological Institute, Warsaw, Poland. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 146: 78*
The following papers are included in this issue: *Some problems relating to retirement of birds to nest boxes for the night*, P. Busse and B. Olech; *Morphological variability of the* Passer domesticus *(L.) skull in postnatal development*, A. L. Ruprecht; *Observations on the appearance and distribution of birds in the Baltic near Hel Peninsula*, S. Manikowski; *Birds in the southeastern area of Niepolomice Forest*, W. Kania; *Studies on crossbreeds of canary*, Serinus canaria *(L.), and serin*, Serinus serinus *(L.)*, J. Zimka; *Operation Baltic 1967. Bird ringing report*, P. Busse and M. Gromadzki; *The occurrence of the nightingale*, Luscinia megarhynchos *Brehm and thrush nightingale*, Luscinia luscinia *(L.) in Warsaw*, M. Luniak; and *Observations of ivory gull*, Pagophila eburnea *(Phipps) in the south of West Spitsbergen (Vestspitsbergen)*, K. Birkenmajer.

Benson, C. W. SKINS OF EXTINCT OR NEAR EXTINCT BIRDS IN CAMBRIDGE. *Bull. British Ornithol. Club* 92(3): 59-68. Apr. 1972. *WR 146: 78*
The total number of forms included is 104, of which 31 are from the Hawaii Islands, 19 from the Malagasy Region, 16 from New Zealand and outlying islands and 13 from the West Indies. Two skins of *Peltacula exsul* (Rodriguez, Malagasy Region) are unique. There is one of *Chaetoptila angustipluma* (Hawaii Island), of which only three other specimens are known.--From summ.

Boshko, S. I. [THE CHARACTERISTICS OF URBANIZATION PROCESSES OF BIRDS.] *Vestn. Leningrad Univ. Ser. Biol.* 26(9): 5-14. 1971. [From Biol. Abstr. 53(7), 1972. In Russian with English summ.] *WR 146: 78*
[Leningrad State Univ., Leningrad, USSR.]

Brosset, André. PREMIÈRES OBSERVATIONS SUR LA REPRODUCTION DE SIX OISEAUX AFRICAINS. [FIRST OBSERVATIONS ON THE REPRODUCTION OF SIX AFRICAN BIRDS.] *Alauda* 39(2): 112-126, illus. 1971. [From Biol. Abstr. 53(4), 1972. In French with English summ.] *WR 146: 78*
[Lab. Primatol. & Ecol. Equat., B.P. 18, Makokou, Gabon.] First observations are reported on the nest, eggs and reproduction of 6 African species, the bittern *Tigriornis leucolopha*, the eagle *Cassinaetus africanus*, the bulbuls *Bleda eximia* and *Criniger barbatus*, and thrush *Stiphromis erythrothorax* and *Fraseria cinerascens*.

Davis, David E., and Irvin R. Savidge. DISTRIBUTION OF CERTAIN BIRDS IN VARIOUS TYPES OF VEGETATION. *Bird-Banding* 42(4): 264-268, 1 fig. Oct. 1971. *WR 146: 78*
[N.C. State Univ., Raleigh.] Mist nets operated in stands of red pine and oak-hardwood captured few birds; whereas, nets operated in grass-scrub, scrub, and aspen captured many.--Courtesy/ Paul A. Stewart.

Kricher, John C. BIRD SPECIES DIVERSITY: THE EFFECT OF SPECIES RICHNESS AND EQUITABILITY ON THE DIVERSITY INDEX. *Ecology* 53(2): 278-282. Early Spring 1972. *WR 146: 79*

[Wheaton Coll., Norton, Mass.] The evenness with which species were numerically distributed was lowest and had its greatest influence on the diversity index in a herbaceous field. Equitability was higher and more constant in a cedar field and an oak forest. Territoriality was thought to account for the higher equitabilities observed in summer. In winter, the more rigorous environment was thought to be a factor in lowering the equitability, at least in the cedar field. Equitability was not lowered as much in the oak forest, possibly due to aggregations of birds into mixed species flocks.--Courtesy/ Paul A. Stewart.

Kroneisl, Renata, editor. LARUS / XI / 1957. *Published for Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Nolit Publishing House, Belgrade, Yugoslavia.* TT 70-56076. 132 p. 1972. Serbo-Croatian original published by Institute of Ornithology, Zagreb, Yugoslavia, in 1965. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 146: 79*

The following papers are included in this issue: *Bird-banding in 1956: 1. Results of bird-banding by the Ornithological Institute of the Croatian Zoological Museum in Zagreb, 11th Report; 2. Foreign recoveries in Yugoslavia, 7th Report*, Renata Kroneisl-Rucner; *Frequency and living conditions of the raven* (Corvus corax) *in some areas in Vojvodina*, Milorad Marčetić; *On the birdlife of Vojvodina*, László Szlivka; *Ornithological observations in Yugoslavia (Macedonia)*, Alfred Micholitsch; *List of birds seen in Yugoslavia from 17 to 25 May, 1957*, C. Hughes and A. R. Sumerfield; *New data for the study of the ornithofauna of the Lower Neretva*, Dragutin Rucner; *Ornithophenological notes from the Dubrovnik area*, Ivan Tutman; *Data on the red-backed shrike's* (Lanius collurio) *nutrition*, László Szlivka; *The stomach contents of birds, part II*, J. Kovačević and M. Danon; *Song of the nightingale and thrush nightingale, part II: thrush nightingale* (Luscinia luscinia), Hans Stadler; *Cold tolerance of the white stork* (Ciconia ciconia), Ante Tadić; and *On migration of the red-throated pipit* (Anthus cervinus) *through Europe, especially Germany*, Herbert Ringleben.

Mayr, Ernst. NEW SPECIES OF BIRDS DESCRIBED FROM 1956 TO 1965. *J. Ornithol.* 112(3): 302-316. 1971. [From Biol. Abstr. 53(11), 1972. In English with German summ.] *WR 146: 79*

[Harvard Univ., Cambridge, Mass.] A total of 51 new spp. of birds were described in the 10 yr. period from 1956 to the end of 1965.

Ochapovskii, V. A. [RARE BIRDS OF THE EASTERN AZOV SEA TERRITORY.] *Vestn. Zool.* 5(5): 54-59, illus. 1971. [From Biol. Abstr. 53(12), 1972. In Russian with English summ.] *WR 146: 79*

[Kuban Agric. Inst., Krasnodar, USSR.]

Rucner, Renata, editor. LARUS / IV-V / 1950-1951. *Published for Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Nolit Publishing House, Belgrade, Yugoslavia.* TT 70-56069. 185 p. 1972. Serbo-Croatian original published by Institute of Ornithology, Zagreb, Yugoslavia, in 1952. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 146: 79*

The following papers are included in this issue: *Results of bird banding by the Ornithological Institute of Zagreb in 1949 and 1950*, Renata Kroneisl; *Contribution to the migration of the starling* (Sturnus vulgaris *(L.)*) *in Croatia*, Konstantin Igalffy; *Penetrations of the collared turtle dove*, Streptopelia decaocto *(Friv.), to northwestern and southern Europe*, Jakob Huber; *The collared turtle dove*, Streptopelia d. decaocto *(Friv.), in Yugoslavia*, Dragutin Rucner; *Two-year waxing* (Bombycilla g. garrulus *(L.)*) *invasion*, András Keve; *Rose-colored starling* (Pastor roseus *(L.)*) *invasion of Hungary*, Imre Pátkai; *Does the rose-colored starling nest in Macedonia?*, Lavrentije Mazajev; *Contribution*

to the biology of the pratincole, Glareola p. pratincola *(L.)*, Wolfgang Makatsch; *Through Dalmatia with an ornithological notebook*, Ivan Tutman; *Contribution to the study of the birds of Palestine*, Pavle Rotter; *Contribution to the study of the taxonomy of the gulls of the Adriatic Coast*, Renata Kroneisl; *Vocalisations of the birds of the Balkans IV*, Hans Stadler; *The stomach contents of birds (from materials collected in the period 1903-1950)*, Josip Kovačević and Mojse Danon; and *Stomach contents of the blackbird* (Turdus merula *L.*), Ivan Tutman.

Rucner, Renata, editor. LARUS / VI-VII / 1952-1953. *Published for Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Nolit Publishing House, Belgrade, Yugoslavia.* TT 70-56071. 188 p. 1972. Serbo-Croatian original published by Institute of Ornithology, Zagreb, Yugoslavia, in 1954. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 146: 80*

The following papers are included in this issue: *Results of bird banding carried out by the Ornithological Institute of Zagreb in 1951 and 1952, 8th Report*, R. Kroneisl-Rucner; *Recoveries of birds ringed by foreign institutions in the period 1940-1952*, R. Kroneisl-Rucner; *Birds of the Neretva Valley*, D. Rucner; *Contribution to the study of the avifauna of the immediate environs of Split*, M. Krpan; *From an ornithological diary. Part 2*, I. Tutman; *Occurrence of the great spotted cuckoo*, Clamator glandarius *(L.)*, *in Macedonia*, R. Jovetić; *A study of the nidobiology of stock dove*, Columba oenas *L.*, J. Huber; *Occurrence of pratincole*, Glareola pratincola *(L.)*, *in Hungary and some neighboring states*, P. Beretzk; *Some ornithological notes from Palestine*, P. Rotter; and *How grave an injury can a bird survive*, R. Hauptfeld.

Tuck, Leslie M. THE OCCURRENCE OF GREENLAND AND EUROPEAN BIRDS IN NEWFOUNDLAND. *Bird-Banding* 42(3): 184-209, 8 figs. July 1971. *WR 146: 80*

[Canadian Wildl. Serv., St. John's, Newfoundland, Canada.] Information is given on more than 25 spp.--Courtesy/ Paul A. Stewart.

Wolters, H. E. PROBLEME DER GATTUNGSABGRENZUNG IN DER ORNITHOLOGIE. [PROBLEMS OF GENUS DIFFERENTIATION IN ORNITHOLOGY.] *Bonn. Zool. Beitr.* 22 (3/4): 210-219, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 80*

[Zool. Forschungsinst., Mus. A. Loenig, Bonn, Germany.]

BIRDS--TECHNIQUES

Bray, Olin E., and George W. Corner. A TAIL CLIP FOR ATTACHING TRANSMITTERS TO BIRDS. *J. Wildl. Manage.* 36(2): 640-642, 2 figs. Apr. 1972. *WR 146: 80*

[Denver Wildl. Res. Cent., Denver, Colo.] Abstract: Construction details are given for a 0.3-gram plastic tail clip used to attach a transmitter and power source to tail feathers of starlings *(Sturnus vulgaris)* and red-winged blackbirds *(Agelaius phoeniceus)*. The tail clip can be attached in 1 minute and can be adapted for other species. In tests in pens and in the field, 28 starlings and 9 redwings, instrumented with 4-gram transmitter packages, and 2 sparrow hawks *(Falco sparverius)*, instrumented with 8-gram packages, appeared to exhibit unrestricted behavior, although some individuals required an adjustment period.

Coon, D. W., and R. F. Gotie. A MODIFIED HOLDING BOX FOR BANDING LARGE NUMBERS OF BIRDS. *Bird-Banding* 43(1): 55-56, 1 fig. Jan. 1972. *WR 146: 80*

[Bur. Sport Fish. & Wildl., Portland, Oreg.] "With a full crew of 15 persons using three of these boxes, we banded over 2,400 cowbirds in less than 45 minutes. This figure contrasts with 2,800 cowbirds banded in over three hours without the separating boxes."--Courtesy/ Paul A. Stewart.

Duncan, K. W. A GENERALIZED COMPUTER PROGRAM IN FORTRAN IV FOR LISTING ALL POSSIBLE COLOR BAND PERMUTATIONS. *Bird-Banding* 42(4): 279-287. Oct. 1971. *WR 146: 80*

[Univ. Canterbury, Christchurch, New Zealand.]

Dusi, Julian L., Rosemary T. Dusi, and Darrel L. Bateman. THE USE OF MIST NETS AND DECOYS IN HERON AND IBIS BANDING STUDIES. *Inland Bird Banding News* 43(1): 6-7, 2 figs. Jan.-Feb. 1971. *WR 146: 81*

[Auburn Univ., Auburn, Ala.] Cattle egrets *(Ardeola ibis)* were caught at the edge of the colony or in a nearby pasture. White ibis *(Guara alba)* decoys were only effective at the edge of a swamp or feeding area and were most effective at the beginning of the breeding season. By the end of the breeding season, the decoys were much less effective, because either the birds were not attracted to other individuals, or they had seen the decoys too many times before.--Courtesy/ Paul A. Stewart.

Maxwell, George R. II, and Ralph DiCaprio. LABORATORY MAINTENANCE OF TREE SPARROWS. *Kingbird* 22(1): 8-17. Jan. 1972. *WR 146: 81*

[State Univ. Coll., Oswego, N.Y.] *"Spizella arborea."*

Stewart, Robert M. THE RELIABILITY OF AGING SOME FALL MIGRANTS BY SKULL PNEUMATIZATION. *Bird-Banding* 43(1): 9-14, 1 fig. Jan. 1972. *WR 146: 81*

[Point Reyes Bird Observatory, P.O. Box 321, Bolinas, Calif.] Skull pneumatization can be used for aging some species of passerines during the fall migration.--Courtesy/ Paul A. Stewart.

Whitaker, A. H. AN IMPROVED MIST NET RIG FOR USE IN FORESTS. *Bird-Banding* 43(1): 1-8, 4 figs. Jan. 1972. *WR 146: 81*

[Ecol. Div., DSIR, Lower Hutt, New Zealand.] Summary: An improved mist net rig is described, one that has been found effective to catch birds in the canopy of subtropical rain forests. The net rig is simple and cheap to construct and maintain, and after 18 months of hard use, the rig has had no serious breakdowns nor shown signs of deterioration. More than 1200 birds of 18 species were caught in the first 12 months of operation.--Courtesy/ Paul A. Stewart.

BIRDS--MORPHOLOGY & PHYSIOLOGY

Biur, Krishna, and J. P. Thapliyal. CRANIAL PNEUMATIZATION IN THE INDIAN WEAVER BIRD, *PLOCEUS PHILIPPINUS*. *Condor* 74(2): 198-200, 1 fig. Summer 1972. *WR 146: 81*

[Banaras Hindu Univ., Varanasi-5, U.P., India.] Pneumatization of the cranium starts before the young leave the nest and is complete when they are 120-140 days old.--Courtesy/ Paul A. Stewart.

Dyck, Jan. STRUCTURE AND COLOUR-PRODUCTION OF THE BLUE BARBS OF *AGAPORNIS ROSEICOLLIS* AND *COTINGA MAYNANA*. *Z. Zellforsch. Mikroskop. Anat.* 115(1): 17-29, illus. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 81*

[Univ. Copenhagen, Copenhagen, Denmark.]

George, William G., and Clark L. Casler. SUBALULAR APTERIUM IN BIRDS. *Auk* 89(2): 245-262, 2 figs. Apr. 1972. *WR 146: 81*

[Southern Ill. Univ., Carbondale.] The presence or absence of a subalular apterium is variable within genera and families but constant within species. Neither functional nor phylogenetic explanations for its existence have been determined.--Courtesy/ Paul A. Stewart.

Gwinner, Eberhard, Peter Berthold, and Helmut Klein. UNTERSUCHUNGEN ZUR JAHRESPERIODIK VON LAUBSAENGERN: II. EINFLUSS DER TAGESLICHTDAUER AUF DIE ENTWICKLUNG DES GEFIEDERS, DES GEWICHTS UND DER ZUGUNRUHE BEI *PHYLLOSCOPUS TROCHILUS* UND *PH. COLLYBITA*. [INVESTIGATIONS ON ANNUAL RHYTHMS IN WARBLERS: II. THE EFFECTS OF PHOTOPERIOD ON THE DEVELOPMENT OF PLUMAGE, BODY WEIGHT AND MIGRATORY RESTLESSNESS IN *PHYLLOSCOPUS TROCHILUS* AND *PH. COLLYBITA*.] *J. Ornithol.* 112(3): 253-265, illus. 1971. [From Biol. Abstr. 53(8), 1972. In German with English summ.] *WR 146: 81*

[Max-Planck-Inst. Verhaltensphysiol., Erling-Andechs, Germany.]

Hamerstrom, F., and F. Hamerstrom. A METHOD OF RECORDING MOLT. *Inland Bird Banding News* 43(4): 107-108, 1 fig. July-Aug. 1971. *WR 146: 82*

Haukioja, Erkki. PROCESSING MOULT CARD DATA WITH REFERENCE TO THE CHAFFINCH *FRINGILLA COELEBS*. *Ornis Fenn.* 48(1): 25-32, illus. 1971. [From Biol. Abstr. 53(10), 1972. In English with Finnish summ.] *WR 146: 82*
[Univ. Turku, Turku, Finland.]

Jehl, Joseph R., Jr. THE COLOR PATTERNS OF DOWNY YOUNG RATITES AND TINAMOUS. *Trans. San Diego Soc. Nat. Hist.* 16(13): 291-302, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 82*
[San Diego Nat. Hist. Mus., San Diego, Calif.]

Kinsky, F. C. THE CONSISTENT PRESENCE OF PAIRED OVARIES IN THE KIWI *(APTERYX)* WITH SOME DISCUSSION OF THIS CONDITION IN OTHER BIRDS. *New Zealand Dep. Internal Affairs Wildl. Publ.* no. 133. 24 p., 5 figs. 1971. [Reprinted from J. Ornithol. 112(3): 334-357. 1971. In English with German summ.] *WR 146: 82*
[Dominion Mus., Wellington, New Zealand.] The ratite order Apterygiformes is the only group of birds in which: paired ovaries occur consistently without known exceptions; the right ovary (as well as the left) is usually functional; successful ovulation from the right ovary (as well as the left) is a normal occurrence; and if more than one egg is laid during the same season, ovulation occurs alternately from the two ovaries.--From summ.

Lederer, Roger J. THE ROLE OF AVIAN RICTAL BRISTLES. *Wilson Bull.* 84(2): 193-197, 3 figs. June 1972. *WR 146: 82*
[Univ. Ill., Urbana.] Summary: Proposed explanations for rictal bristles are that they perform tactile functions, serve as an insect scoop, or protect other facial feathers. In the Tyrannidae, at least, motion pictures indicate that they do not play a part in prey capture.--Courtesy/ Paul A. Stewart.

MacBriar, Wallace N., Jr. WING MEASUREMENT VARIATIONS: II. *Inland Bird Banding News* 43(1): 21-27. Jan.-Feb. 1971. *WR 146: 82*
[2847 N. Stowell Ave., Milwaukee, Wis.] Courtesy/ Paul A. Stewart.

Markus, Miles B. NOTES ON THE NATAL PLUMAGE OF SOUTH AFRICAN PASSERIFORM BIRDS. *Ostrich* 43: 17-22. 1972. *WR 146: 82*
[Univ. London, London, England.] It would appear that natal pterylosis may sometimes be used in systematic studies, bearing in mind that taxonomic value cannot be assessed independently of adaptive significance. Whether passerine neossoptiles are degenerating structures and whether they have an embryonic and/or postnatal function(s) remain important questions. Striking features are the infrageneric variation with regard to the presence/absence of neossoptiles in *Erythropygia* and *Estrilda*, a possible absence of capital neossoptiles in *Corvus capensis* and the unusual natal pteryloses of *Campephaga*, *Lanius* and *Zosterops*.--From summ.

Middleton, Alex L. A. THE STRUCTURE AND POSSIBLE FUNCTION OF THE AVIAN SEMINAL SAC. *Condor* 74(2): 185-190, 8 figs. Summer 1972. *WR 146: 82*
[Univ. Guelph, Guelph, Ontario, Canada.] Courtesy/ Paul A. Stewart.

Mundinger, Paul C. ANNUAL TESTICULAR CYCLE AND BILL COLOR CHANGE IN THE EASTERN AMERICAN GOLDFINCH. *Auk* 89(2): 403-419, 11 figs. Apr. 1972. *WR 146: 82*
[Rockefeller Univ., New York, N.Y.] The annual testis cycle of the eastern American goldfinch, *Spinus t. tristis*, was determined by histological examination of testes of wild birds. Three parameters, tubule lipids, spermatogenic development, and differentiation of the interstitium, adequately describe the cycle. Two other parameters, lipid content of the Leydig cells and testis size, were less reliable. Seasonal changes of the external characters, bill color and molt, correlate well with the annual testes cycle.--From summ. Courtesy/ Paul A. Stewart.

Nottebohm, Fernando. NEURAL LATERALIZATION OF VOCAL CONTROL IN A PASSERINE BIRD: II. SUBSONG CALLS AND A THEORY OF VOCAL LEARNING. *J. Exp. Zool.* 179(1): 35-49, illus. 1972. [From Biol. Abstr. 53(12), 1972.] *WR 146: 83*
[Rockefeller Univ., New York, N.Y.] *"Fringella coelebs."*

Oehme, Hans. UEBER DIE GEOMETRISCHE VERWINDUNG DES VOGELFLUEGELS. [ON THE GEOMETRICAL TWIST OF THE AVIAN WING.] *Biol. Zentralbl.* 90(2): 145-156, illus. 1971. [From Biol. Abstr. 53(9), 1972. In German with English summ.] *WR 146: 83*
[Dtsch. Akad. Wiss., Berliner Tierpark, Berlin, Germany.] Investigations on wing-profiles in the starling *(Sturnus vulgaris)* and the collared turtledove *(Streptopelia decaocto)* yielded information on the adjustment of wing sections. Positive twist in direction from the plane of symmetry to wing tip compensates the decreasing mean camber of the wing profiles and effects a good approximation to elliptic loading. It improves performance in gliding flight by reducing the induced drag. Similar setting angles in the wing during the downstroke improve the yield of lifting force during flapping flight in larger birds.

Oniki, Yoshika. SOME TEMPERATURES OF PANAMANIAN BIRDS. *Condor* 74(2): 209-215. Summer 1972. *WR 146: 83*
[Princeton Univ., Princeton, N.J.] Data for 38 spp.--Courtesy/ Paul A. Stewart.

Pikula, Jiří. DIE POSTNATALE ENTWICKLUNG VON *TURDUS PHILOMELOS* UNTER NATUERLICHEN BEDINGUNGEN. [THE POSTNATAL DEVELOPMENT OF *TURDUS PHILOMELOS* UNDER NATURAL CONDITIONS.] *Zool. Listy* 20(3): 281-291, illus. 1971. [From Biol. Abstr. 53(6), 1972. In German with English summ.] *WR 146: 83*
[Inst. Vertebrate Res., Czech. Acad. Sci., Brno, Czechoslovakia.] The present study is based on measurements of growth of 42 young in 12 clutches, taken during the period between their hatching and their departure from the nests. The investigation was carried out in the xerothermic area 17 kms NW of Brno (Czechoslovakia) between 3 May and 22 May, 1968. The data were compared with those obtained by measuring 16 young captured four days after their departure from nests, 29 subadult and 75 adult individuals of *T. philomelos*. The results indicate that one day prior to the departure from the nest, the young do not show the dimensions of the adult individuals, and that the average body weight of the young was lower in those nests that contained more young and in such cases in which the young remained in the nest for a shorter period of time.

Quickelberge, C. D. VARIATIONAL PATTERNS AND RACES OF THE CLAPPER LARK *MIRAFRA APIATA* (VIEILLOT). *Ann. Cape Prov. Mus. Nat. Hist.* 8(3): 25-37, illus. 1970. [From Biol. Abstr. 53(6), 1972.] *WR 146: 83*
[East London Mus., London, England.]

Reid, Brian. THE WEIGHT OF THE KIWI AND ITS EGG. [and] COMPOSITION OF A KIWI EGG. *New Zealand Dep. Internal Affairs Wildl. Publ.* no. 137A & 137B. p. 1-8. 1971. [Reprinted from Notornis 18(4): 245-249 and p. 250-252. Dec. 1971.] *WR 146: 83*
[Wildl. Serv., Dep. Internal Affairs, Wellington, New Zealand.] *"Apteryx australis mantell."*

Rheinwald, Goetz. GEWICHTSENTWICKLUNG NEST JUNGER SAELDLAUBSAENGER *(PHYLLOSCOPUS SIBILATRIX)*. [WEIGHT DEVELOPMENT OF NESTLING WOOD WARBLERS *(PHYLLOSCOPUS SIBILATRIX)*.] *Bonn. Zool. Beitr.* 22(3/4): 247-251, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 83*
[Zool. Forschungsinst., Mus. A. Koenig, Bonn, Germany.]

Storer, Robert W. THE JUVENAL PLUMAGE AND RELATIONSHIPS OF *LOPHOSTRIX CRISTATA*. *Auk* 89(2): 452-455, 1 fig. Apr. 1972. *WR 146: 83*
[Univ. Mich., Ann Arbor.] Courtesy/ Paul A. Stewart.

Stresemann, Erwin, and Vesta Stresemann. DIE POSTNUPTIALE UND DIE PRAENUPTIALE VOLLMAUSER DER ASIATISCHEN WUERGER *LANIUS TIGRINUS* UND *L. CRISTATUS*. [THE POSTNUPTIAL AND PRENUPTIAL COMPLETE MOLT OF THE ASIATIC SHRIKE *LANIUS TIGRINUS* AND *L. CRISTATUS*. *J. Ornithol.* 112(4): 373-395. 1971. [From Biol. Abstr. 53(11), 1972. In German with English summ.] *WR 146: 84*
[Kamillenst. 28, Berlin, Germany.]

Traylor, Melvin A. NOTES ON *METOPOTHRIX AURANTIACUS*. *Auk* 89(2): 455-456. Apr. 1972. *WR 146: 84*
[Field Mus. Nat. Hist., Chicago, Ill.] Describes early molts and plumages and discusses geographic variation of the orange-crowned softtail.--Courtesy/ Paul A. Stewart.

Williamson, Kenneth. REVERSAL OF NORMAL MOULT SEQUENCE IN THE SPOTTED FLYCATCHER. *British Birds* 65(2): 50-51. Feb. 1972. *WR 146: 84*
[Beech Grove, Tring, Hertfordshire, England.] *"Muscicapa striata."*

BIRDS--BEHAVIOR

Barash, David P. LEK BEHAVIOR IN THE BROAD-TAILED HUMMINGBIRD. *Wilson Bull.* 84(2): 202-203. June 1972. *WR 146: 84*
[State Univ. Coll., Oneonta, N.Y.] Three broad-tailed hummingbirds *(Selasphorus platycercus)* conducted their display performances separated from each other by about 7 m. Identical locations were occupied on each of four consecutive days. A female approached but did not associate directly with any of the males.--Courtesy/ Paul A. Stewart.

Brosset, A. TERRITORIALISME ET DÉFENSE DU TERRITOIRE CHEZ LES MIGRATEURS PALÉARCTIQUES HIVERNANT AU GABON. [TERRITORIALISM AND TERRITORY DEFENSE IN PALEARCTIC MIGRATORY BIRDS WINTERING OVER IN GABON.] *Alauda* 39(2): 127-131. 1971. [From Biol. Abstr. 53(4), 1972. In French.] *WR 146: 84*
[Lab. Primatol. & Ecol. Equat., B.P. 18, Makokou, Gabon.] *"Acrocephalus arundinaceus, Motacilla flava* and *Hippolais icterina."*

Carothers, Steven W., N. Joseph Sharber, and Russell P. Balda. STELLER'S JAYS PREY ON GRAY-HEADED JUNCOS AND A PYGMY NUTHATCH DURING PERIODS OF HEAVY SNOW. *Wilson Bull.* 84(2): 204-205. June 1972. *WR 146: 84*
[Mus. N. Ariz., Flagstaff.] *"Cyanocitta stelleri."*--Courtesy/ Paul A. Stewart.

Chaudhuri, Shri A. B., and Shri K. Chakrabarti. WILDLIFE BIOLOGY OF THE SUNDARBANS FORESTS. (III) A STUDY OF THE BREEDING BIOLOGY OF BIRDS. *Div. For. Offics* (Calcutta, India). 20 p. + 3 p. of graphs. [1972.] *WR 146: 84*
[Indian For. Serv., Calcutta, India.] Abstract: The vast expanse of mangrove swamps, studded closely with network of tiny islands of mud flats, supporting low wooded forests of very high density and virgin beauty have been chosen by several species of water and marsh birds as their breeding habitat. The authors chose a representative section of such an area in the Sajnakhali Wild Life Sanctuary for the study of habitat and breeding behaviour of the open bill stork, large egret and little cormorant. It covers some behavioural and functional roles of plant and animal communities that form an integral part of the entire ecosystem of the Sundarbans. It includes nests and pattern of nesting, laying of eggs, hatching, growth of fledglings, food and food habits, action of predators, parasitism, mortality and survival pattern of the birds. Common informations relating to the birds that we get in the text books have not been described. It is the result of three seasons' study and is intended to be continued. Here, the breeding behaviour of these three widely occurring species of birds are expected to differ from those elsewhere because of the peculiar nature of terrain not studied so far anywhere else.

Curio, Eberhard. DIE AKUSTISCHE WIRKUNG VON FEINDALARMEN AUF EINIGE SING-VOEGEL. [THE ACOUSTIC EFFECT OF ENEMY ALARMS ON SOME SONGBIRDS.] *J. Ornithol.* 112(4): 365-372. 1971. [From Biol. Abstr. 53(12), 1972. In German with English summ.] *WR 146: 85*
[Postfach 2148, Bochum-Querenburg, Germany.]

Dow, Douglas D. AVIAN BATHING BEHAVIOUR. *West. Australian Nat.* 11(8): 184-186. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 85*
[Univ. Queensland, Australia.]

Elgood, J. H. THE BREEDING SEASON OF *CAPRIMULGUS TRISTIGMA* IN NIGERIA. *Bull. British Ornithol. Club* 92(3): 33-34. Apr. 1972. *WR 146: 85*

Farber, Harvey. EVIDENCE OF TWO TREE SWALLOW FEMALES SHARING THE SAME NEST BOX. *Wilson Bull.* 84(2): 204. June 1972. *WR 146: 85*
[112-50 78th Ave., Forest Hills, N.Y.] The nest in a tree swallow box was attended by two females and one male *Iridoprocne bicolor*. The nest contained eight eggs and, later, eight young.--Courtesy/ Paul A. Stewart.

Fisher, Charles D., Eric Lindgren, and William R. Dawson. DRINKING PATTERNS AND BEHAVIOR OF AUSTRALIAN DESERT BIRDS IN RELATION TO THEIR ECOLOGY AND ABUNDANCE. *Condor* 74(2): 111-136, 11 figs. Summer 1972. *WR 146: 85*
[Stephen F. Austin State Univ., Nacogdoches, Tex.] Granivorous species were found to be most dependent on water, with carnivorous and insectivorous species being largely independent of the need for drinking water. Birds drank more water on hot than cool days. Drinking was chiefly in the morning and evening.--Courtesy/ Paul A. Stewart.

Flath, Dennis L. CANADA GOOSE-OSPREY INTERACTIONS. *Auk* 89(2): 446-447. Apr. 1972. *WR 146: 85*
[Mont. Fish & Game Dep., Libby.] Canada geese *(Branta canadensis)* sometimes successfully used osprey *(Pandion haliaetus)* nests, one nest 90 feet above ground. One clutch incubated by an osprey contained eggs of both a Canada goose and an osprey.

Fretwell, Stephen Dewitt, and Henry L. Lucas, Jr. ON TERRITORIAL BEHAVIOR AND OTHER FACTORS INFLUENCING HABITAT DISTRIBUTION IN BIRDS: I. THEORETICAL DEVELOPMENT. *Acta Biotheor.* 19(1): 16-36, illus. 1969. [From Biol. Abstr. 53 (7), 1972.] *WR 146: 85*
[Princeton Univ., Princeton, N.J.]

Fretwell, Stephen Dewitt, and James Stevan Calver. ON TERRITORIAL BEHAVIOR AND OTHER FACTORS INFLUENCING HABITAT DISTRIBUTION IN BIRDS: II. SEX RATIO VARIATION IN THE DICKCISSEL *(SPIZA AMERICANA* GMEL.). *Acta Biotheor.* 19(1): 37-44, illus. 1969. [From Biol. Abstr. 53(7), 1972.] *WR 146: 85*
[Princeton Univ., Princeton, N.J.]

Fretwell, Stephen Dewitt. ON TERRITORIAL BEHAVIOR AND OTHER FACTORS INFLUENCING HABITAT DISTRIBUTION IN BIRDS: III. BREEDING SUCCESS IN A LOCAL POPULATION OF FIELD SPARROWS *(SPIZELLA PUSILLA* WELS.). *Acta Biotheor.* 19(1): 45-52. 1969. [From Biol. Abstr. 53(7), 1972.] *WR 146: 85*
[Princeton Univ., Princeton, N.J.]

Goertz, John W., and Kim Rutherford. ADULT CAROLINA CHICKADEE CARRIES YOUNG. *Wilson Bull.* 84(2): 205-206. June 1972. *WR 146: 85*
[La. Tech Univ., Ruston.] A Carolina chickadee *(Parus carolinensis)* removed its young from its nest and carried them away after the nest had been disturbed. Four newly-hatched chicks were removed in a 30-minute period.--Courtesy/ Paul A. Stewart.

Harrison, C. J. O. THE SPACE REQUIREMENTS OF SMALL BIRDS. *Avicult. Mag.* 78 (2): 49-50. Mar.-Apr. 1972. *WR 146: 86*

[Berkhamsted, Hertfordshire, England.] The suggested minimal space allowed for each pair in an indoor situation is 50+ or preferably 70+ cubic feet. In an outdoor aviary 100+ to 350 cubic feet or more should be allowed. The greatest dimension should be in length.

Immelmann, Klaus. ZUR OEKOLOGISCHEN BEDEUTUNG PRAEGUNGSBEDINGTER ISOLATIONS-MECHANISMEN. [THE ECOLOGICAL SIGNIFICANCE OF ISOLATING MECHANISMS BASED ON IMPRINTING.] *Verh. Dtsch. Zool. Ges.* 64: 304-314, illus. 1970. [From Biol. Abstr. 53(11), 1972. In German with English summ.] *WR 146: 86*

[Univ. Braunschweig, Brunswick, Germany.] Cross-fostering experiments were carried out with 3 spp. of grass finches (Estrildidae): All individuals reared by another species directed their sexual activities preferentially or exclusively towards members of the foster-parent species. These results indicate that early experience seems to have a crucial influence on the latter choice of the sexual partner. Subsequent experiments have revealed the great stability of sexual preferences established early in juvenile life: After the 43rd day of life it was impossible to alter these preferences at all neither by the mere presence nor by (forced) joint breeding activities with nonspecific partners. Absolute irreversibility must have been established by that age, which is several weeks before the animals have attained sexual maturity.

Kenyon, R. F. POLYGYNY AMONG SUPERB LYREBIRDS IN SHERBROOKE FOREST PARK, KALLISTA, VICTORIA. *Emu* 72(2): 70-76, 2 figs. Apr. 1972. *WR 146: 86*

[c/o Sherbrooke Survey Group (VORG), 10 Hughes St., Yarraville, Victoria, Australia.] Summary: Evidence is presented on the association of a male Lyrebird [*Menura novaehollandiae*] with several females. The male Lyrebird holds territory enclosing the separate territories of several females. Female territories do not encroach on a lightly timbered centrally located area of the male's territory that contains the most-favoured display and copulation-mounds. It is in this area where the copulations by one male with several females take place. The male courts the female for several weeks before copulation and maintains his association with the same females from season to season. The songs and displays during courtship are described.

Koenig, Lilli. DER NAHRUNGSVERBRAUCH JUNGER *MELITTOPHAGUS BULLOCKOIDES* (MEROPIDAE) WAEHREND DER ENTWICKLUNGSZEIT. [THE CONSUMPTION OF FOOD BY YOUNG *MELITTOPHAGUS BULLOCKOIDES* (MEROPIDAE) DURING THE DEVELOPMENTAL PERIOD.] *Sitzungsber. Oesterr. Akad. Wiss. Math.-Naturwiss. Kl.* 178(9/10[12]): 323-326, illus. 1969. [From Biol. Abstr. 53(8), 1972. In German.] *WR 146: 86*

[Vienna, Austria.] Two artificially bred specimens of the east African bee-eater *M. bullockoides* were raised from the egg. Post-embryonic development and behavior are described briefly. Both birds received only freshly killed insects as fodder. This food and the pellets produced by the birds were exactly counted and calorie value was determined. Consumption of food and body growth were graphically compared. The growth curve increased steadily while the curve for food consumption was irregular.

Krieg, David C. THE BEHAVIOURAL PATTERNS OF THE EASTERN BLUEBIRD *(SIALIA SIALIS)*. *N.Y. State Mus. Sci. Serv. Bull.* 415. p. 1-139, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 86*

[State Univ. N.Y., New Paltz.] Maintenance activities of the bluebird were studied in the field and in captivity. Twelve activities are described.

Kroodsma, Donald E. VARIATIONS IN SONGS OF VESPER SPARROWS IN OREGON. *Wilson Bull.* 84(2): 173-178, 1 fig. June 1972. *WR 146: 86*

[Oreg. State Univ., Corvallis.] Summary: The song of the Vesper Sparrow in Oregon consists of a whistled introductory phrase followed by as many as seven different trills. One well-studied individual had a repertoire of 43 different trill types, and sang 218 different trill sequences in 400 songs. The similarities of the trills among neighboring males and the consistent inter-locality

differences in the introductory whistled notes suggest that Vesper Sparrows learn at least portions of their songs from adult conspecifics. One male had a reduced song repertoire and sang like a Bewick's Wren; insufficient exposure to songs of adult conspecifics may cause interspecific learning.--Courtesy/ Paul A. Stewart.

Loehrl, Hans. UNTERSCHIEDLICHE BRUTHOEHLENANSPRUCHE VON MEISENARTEN UND KLEIBERN ALS BEITRAG ZUM NISCHENPROBLEM. [DIFFERENCES IN THE ECOLOGICAL NICHE PREFERENCE OF VARIOUS SPECIES OF TITS AND THE NUTHATCH: *PARUS MAJOR, P. CAERULEUS, P. ATER* AND *SITTA EUROPACEA.*] *Verh. Dtsch. Zool. Ges.* 64: 314-317, illus. 1970. [From Biol. Abstr. 53(11), 1972. In German with English summ.] *WR 146: 87*

[Max-Planck-Inst. Verhaltensphysiol., Möggingen, Germany.]

Mengel, Robert M., Roger S. Sharpe, and Glen E. Woolfenden. WING CLAPPING IN TERRITORIAL AND COURTSHIP BEHAVIOR OF THE CHUCK-WILL'S-WIDOW AND POOR-WILL (CAPRIMULGIDAE). *Auk* 89(2): 440-444. Apr. 1972. *WR 146: 87*

[Univ. Kans., Lawrence.] Observations involving both the chuck-will's-widow *(Caprimulgus carolinensis)* and poor-will *(Phalaenoptilus nuttallii)* indicate that wing clapping is associated with territorial defense rather than courtship. --Courtesy/ Paul A. Stewart.

Minock, Michael Edward. SOME BEHAVIORAL RELATIONSHIPS BETWEEN BLACK-CAPPED AND MOUNTAIN CHICKADEES IN AN AREA OF YEAR-AROUND SYMPATRY. *Ph.D. thesis, Utah State Univ.* 100 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 87*

Morse, Douglass H. HABITAT UTILIZATION OF THE RED-COCKADED WOODPECKER DURING THE WINTER. *Auk* 89(2): 429-435, 1 fig. Apr. 1972. *WR 146: 87*

[Univ. Md., College Park.] Summary: Winter observations of a population of Red-cockaded Woodpeckers *(Dendrocopos borealis)* in eastern Louisiana indicated that males and females foraged similarly, concentrating their activities upon trunks of longleaf pines *(Pinus palustris)*. These Red-cockaded Woodpeckers are segregated spatially from Downy Woodpeckers *(D. pubescens)*, which concentrate their activities on the peripheral parts of pines. Hairy Woodpeckers *(D. villosus)* forage primarily on pine trunks, but seldom occur with Red-cockaded Woodpeckers. These results differ from those of Ligon (1968, 1970) in Florida, who found marked differences in the foraging of males and females.--Courtesy/ Paul A. Stewart.

Nottebohm, Fernando, and Robert K. Selander. VOCAL DIALECTS AND GENE FREQUENCIES IN THE CHINGOLO SPARROW *(ZONOTRICHIA CAPENSIS)*. *Condor* 74(2): 137-143, 4 figs. Summer 1972. *WR 146: 87*

[Rockefeller Univ., New York, N.Y.] Courtesy/ Paul A. Stewart.

Oatley, T. B., and D. M. Skead. NECTAR FEEDING BY SOUTH AFRICAN BIRDS. *Lammergeyer* no. 15. p. 65-74, 1 fig. Mar. 1972. *WR 146: 87*

Pohl, Hermann. UEBER BEZIEHUNGEN ZWISCHEN CIRCADIANEN RHYTHMEN BEI VOEGELN. [ON RELATIONSHIPS BETWEEN CIRCADIAN RHYTHMS IN BIRDS.] *J. Ornithol.* 112(3): 266-278, illus. 1971. [From Biol. Abstr. 53(8), 1972. In German with English summ.] *WR 146: 87*

[Max-Planck-Inst. Verhaltensphysiol., Erling-Andechs, Germany.] Results were obtained in experiments with three species of fringillid birds *(Fringilla coelebs, F. montifringilla,* and *Carduelis spinus)*.

Poley, Dieter. KOERPERPFLEGE DER KOLIBRIS. [BODY CARE IN HUMMINGBIRDS.] *Bonn. Zool. Beitr.* 22(3/4): 236-246, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 87*

[Zool. Gart., Duisburg, Germany.] Bathing, drying, preening, head scratching, sunning and comfort movements of 23 hummingbirds are described.

Potter, Eloise F. WHAT ON EARTH IS ANTING? *Chat* 36(1): 7-10. Mar. 1972. *WR 146: 88*
[P.O. Box 277, Zebulon, N.C.] Observations on "anting" by wild birds gathered by the author during an eight-year period.

Potter, Peter E. TERRITORIAL BEHAVIOR IN SAVANNAH SPARROWS IN SOUTHEASTERN MICHIGAN. *Wilson Bull.* 84(1): 48-59, 1 fig. Mar. 1972. *WR 146: 88*
[2518 E. Hampton St., Tucson, Ariz.] Male savannah sparrows *(Passerculus sandwichensis)* arrived on their nesting grounds during a 10-day period in mid-April; arrival of females started at the end of April and continued a full month. Most nesting territories covered 601 to 1200 m^2. Territories were smaller than those reported for other species of sparrows. Success in attracting a mate was higher where males held territories larger than 600 m^2. Females left the area within two weeks after their last nests were emptied; the males remained about two weeks longer than the females.--Courtesy/ Paul A. Stewart.

Rand, A. L. NEST-ENTRANCE MODIFICATION IN THE NUTHATCHES. *Auk* 89(2): 450-451. Apr. 1972. *WR 146: 88*
[Archbold Biol. Sta., Lake Placid, Fla.] The evolution of the practice of nest entrance modification in the nuthatches is discussed.--Courtesy/ Paul A. Stewart.

Rheinwald, Goetz. BLAUMEISE *(PARUS CAERULEUS)* DEKORIERT IHR NEST MIT BLÄTTERN VON BRENNESSELN *(URTICA DIOICA)*. [BLUE TITMOUSE *(PARUS CAERULEUS)* DECORATED ITS NEST WITH THE LEAVES OF *URTICA DIOICA*.] *Ornithol. Mitt.* 24(3): 47. Mar. 1972. In German with English summ. *WR 146: 88*
[Adenauerallee 150-164, Bonn, Germany.] Summary: Three cases during 1968 and 1969 were observed where the Blue Tit decorated its nest with pieces of leaves of *Urtica dioica*. It is possible that this behaviour is connected with the feeding with caterpillars of *Eurrhypara urticata* during bad weather.

Sedgwick, Eric H. NOTES ON DRINKING HABITS OF BIRDS. *West. Australian Nat.* 12(2): 32-35. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 88*
[Harvey, Western Australia.]

Seibert, Henri C. ANOTHER RECORD OF A SHORT INCUBATION PERIOD FOR THE ROBIN. *Wilson Bull.* 84(1): 95. Mar. 1972. *WR 146: 88*
[Ohio Univ., Athens.] An incubation period of 8 to 8.5 days for a robin *(Turdus migratorius)* is reported.--Courtesy/ Paul A. Stewart.

Shugart, Herman Henry. THE NICHE HYPERSPACE CONCEPT AND HABITAT SELECTION OF WINTER FRINGILLIDS IN NORTHERN GEORGIA. *Ph.D. thesis, Univ. Ga.* 103 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972. *WR 146: 88*

Smith, James N. M., and Richard Dawkins. THE HUNTING BEHAVIOUR OF INDIVIDUAL GREAT TITS IN RELATION TO SPATIAL VARIATIONS IN THEIR FOOD DENSITY. *Anim. Behav.* 19(4): 695-706, 8 figs. Nov. 1971. *WR 146: 88*
[Oxford Univ., Oxford, England.] Abstract: Individual great tits responded to variations in food density by spending a large proportion of their total searching time in the regions of highest food density. Lower densities, however, were not treated differentially, and the birds were slow to react to spatial changes in food density. The results are related to those of L. Tinbergen and T. Royama. The experimental birds' behaviour provides support for Royama's hypothesis that great tits can relate their hunting effort to the profitability of different feeding areas. Tinbergen's search image hypothesis at present lacks behavioural support in titmice and further work is required if searching images are to be thought to play a role in the hunting behaviour of the great tit.

Snow, Barbara K., and D. W. Snow. FEEDING NICHES OF HUMMINGBIRDS IN A TRINIDAD VALLEY. *J. Anim. Ecol.* 41(2): 471-485, 2 figs. June 1972. *WR 146: 88*
[Old Forge, Wingrave, Nr. Aylesbury, Bucks, England.] An account is presented of the feeding habits of the nine species of hummingbirds which are common in the forested lower Arima Valley in Trinidad.--From summ.

Stewart, R. M., M. Stewart, S. Long, and K. Darling. WATCHING A SCRUB JAY NEST. *Point Reyes Bird Observatory Newsletter* no. 22. p. 4-5, 2 figs. June 1972. *WR 146: 89*

Report of observations of a nest for a total of 85 hours during 21 days.

Stork, Hans-Juergen. KORPERWACHSTUM UND ENTWICKLUNG DES FLUGVERMOEGENS VON *TURDUS MERULA* L. [GROWTH AND DEVELOPMENT OF FLIGHT ABILITY IN BLACKBIRDS *(TURDUS MERULA* L.*).*] *Verh. Dtsch. Zool. Ges.* 64: 358-361, illus. 1970. [From Biol. Abstr. 53(11), 1972. In German with English summ.] *WR 146: 89*

[Univ. Munich, Munich, Germany.] Growth of the locomotor apparatus and development of flight ability in blackbirds was analyzed by body measurements and slow motion pictures.

Storteir, Staffan, and Anders Palmgren. LANGTIDSREGISTRERING AV RUVNINGS-RYTMIK OCH MATNINGSFREKVENS MED HJALP AV RADIOAKTIV MARKNING. [LONG-TERM RECORDING OF INCUBATING RHYTHM AND FEEDING FREQUENCY WITH THE AID OF RADIOACTIVE TAGGING.] *Ornis Fenn.* 48(1): 33-35, illus. 1971. [From Biol. Abstr. 53(10), 1972. In Swedish with English summ.] *WR 146: 89*

[Rautalampiv. 5 C 35, Helsinki, Finland.] The automatic recording apparatus and method of radioactive tagging described were used in a study of the daily activity pattern of the black guillemot in the breeding season. The recording system which was constructed and tested in cooperation with the Reactor Laboratory of the Institute of Technology at Otnäs, Finland, is designed to give a continuous and accurate picture of both the incubating rhythm and feeding frequency, without much human interference, over the whole breeding period. Special care was taken to minimize the risk of harm to the tagged birds and their eggs and young by using radioactive sources of low activities.

Taylor, Patria M. HOVERING BEHAVIOR BY HOUSE FINCHES. *Condor* 74(2): 219-221, 3 figs. Summer 1972. *WR 146: 89*

[Shell Chemical Co., P.O. Box 700, Woodbury, N.J.] House finches *(Carpodacus mexicanus)* fed at a hummingbird feeder by hovering at the feeder and inserting their bills into the spout.--Courtesy/ Paul A. Stewart.

Thielcke, Gerhard. DIE SOZIALEN FUNKTIONEN DER VOGELSTIMMEN. [THE SOCIAL FUNCTIONS OF BIRD VOCALIZATIONS.] *Vogelwarte* 25(3): 204-229. 1970. [From Biol. Abstr. 53(6), 1972. In German with English summ.] *WR 146: 89*

[Max-Planck-Inst. Verhaltensphysiol., Moeggingen, Germany.]

Thielcke, Gerhard. VERSUCHE ZUR KOMMUNIKATION UND EVOLUTION DER ANGST-, ALARM- UND RIVALENLAUTE DES WALDBAUMLAEUFERS *(CERTHIA FAMILIARIS).* [EXPERIMENTS ON COMMUNICATION AND EVOLUTION OF THE DISTRESS, ALARM AND RIVAL CALLS OF THE TREE-CREEPER *(CERTHIA FAMILIARIS).*] *Z. Tierpsychol.* 28(5): 506-515, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 89*

[Max-Planck-Inst. Verhaltensphysiol., Moeggingen, Germany.]

Thompson, Richard L., editor. THE ECOLOGY AND MANAGEMENT OF THE RED-COCKADED WOODPECKER / PROCEEDINGS OF A SYMPOSIUM AT OKEFENOKEE NATIONAL WILDLIFE REFUGE / FOLKSTON, GEORGIA / MAY 26-27, 1971. *U.S. Bur. Sport Fisheries & Wildl.* and *Tall Timbers Res. Sta.* (Tallahassee, Fla.). 188 p., illus. 1971. *WR 146: 89*

The following papers are included: *Introduction to the symposium on the ecology and management of the red-cockaded woodpecker*, Lawrence S. Givens; *The evolution, taxonomy, distribution, past populations and current status of the red-cockaded woodpecker*, Jerome A. Jackson; *Some factors influencing numbers of the red-cockaded woodpecker*, J. David Ligon; *Progress report on life history studies of the red-cockaded woodpecker at Tall Timbers Research Station*, W. Wilson Baker; *Home range characteristics of the red-cockaded woodpecker in north-central Florida*, Gilbert T. Crosby; *Status of investigations of range and habitat requirements*, Daniel W. Lay, Ernest W. McDaniel, and Dennis N. Russell; *Utilization of pine resin by the red-cockaded woodpecker and its effectiveness in protecting roosting and nest sites*, John V. Dennis; *A summary of red-cockaded*

woodpecker observations in South Carolina, Ted Beckett; *The red heart disease of southern pines*, Charles Affeltranger; *Observations on the food habits of the red-cockaded woodpecker*, W. Wilson Baker; *Synoptic review of forest resource and use within the range of the red-cockaded woodpecker*, Eugene Czuhai; *Timber management practices for red-cockaded woodpeckers on Federal lands*, John M. Beland; *Timber management practices for red-cockaded woodpeckers on state lands*, Charles R. Shaw; *Red-cockaded woodpeckers on International Paper Company lands*, Carroll J. Perkins; *Some observations and comments on the red-cockaded woodpecker in the Thomasville-Tallahassee game preserve region*, Leon Neel; *Some characteristics of red-cockaded woodpecker cavity trees and management implications in South Carolina*, Melvin L. Hopkins and Teddy E. Lynn; *A survey of red-cockaded woodpecker nesting habitat requirements*, Richard L. Thompson and W. Wilson Baker; and *Appendix: A glossary of terms used in association with the red-cockaded woodpecker*, Jerome A. Jackson and Richard L. Thompson.

Todt, Dietmar. ZUR ORDNUNG IM GESANG DER NACHTIGALL *(LUSCINIA MEGARHYNCHOS L.)*. [ORDERING OF SEQUENCES IN THE SONG OF THE NIGHTINGALE *(LUSCINIA MEGARHYNCHOS L.)*.] *Verh. Dtsch. Zool. Ges.* 64: 249-252, illus. 1970. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 90*
[Univ. Freiburg, Freiburg, Germany.]

Tyler, Stephanie J. BREEDING BIOLOGY OF THE GREY WAGTAIL. *Bird Study* 19(2): 69-80, 2 figs. June 1972. *WR 146: 90*
[Field Cottage, Lanhill, Chippenham, Wiltshire, England.] A summary of data from 699 nest record cards of the grey wagtail *(Motacilla cinerea)* submitted to the British Trust for Ornithology's Nest Record Scheme from 1938 up to and including 1969.

BIRDS--MIGRATION & BANDING REPORTS

Able, Kenneth Paul. ENVIRONMENTAL INFLUENCES ON THE NOCTURNAL MIGRATION AND ORIENTATION OF BIRDS. *Ph.D. thesis, Univ. Ga.* 77 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 90*

Broekhuysen, G. J. THIRD REPORT ON MIGRATION IN SOUTHERN AFRICA. *Ostrich* 42(3): 211-225. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 90*
[Univ. Cape Town, Cape Town, South Africa.] Birds included in this report are: Laridae (5 spp.), Cuculidae (9 spp.), Caprimulgidae (1 sp.: *Caprimulgus europaeus*) and Apodidae (6 spp.).

Bruderer, Bruno. RADARBEOBACHTUNGEN ÜBER DEN FRÜHLINGSZUG IM SCHWEIZERISCHEN MITTELLAND (EIN BEITRAG ZUM PROBLEM DER WITTERUNGSABHÄNGIGKEIT DES VOGELZUGES). [RADAR OBSERVATIONS OF THE SPRING MIGRATION IN NORTHERN SWITZERLAND (A CONTRIBUTION ON THE PROBLEM OF THE EFFECT OF WEATHER UPON BIRD MIGRATION).] *Ornithol. Beob.* 68(3): 89-158, 24 figs. Aug. 1971. In German with French and English summ. *WR 146: 90*
[Univ. Basel, Basel, Switzerland.]

Caughley, Graeme. CORRECTION FOR BAND LOSS. *Bird-Banding* 42(3): 220-221. July 1971. *WR 146: 90*
[Univ. Sydney, Sydney, Australia.] Presents a formula based on the use of two bands.--Courtesy/ Paul A. Stewart.

D'Arms, E., and D. R. Griffin. BALLOONISTS' REPORTS OF SOUNDS AUDIBLE TO MIGRATING BIRDS. *Auk* 89(2): 269-279. Apr. 1972. *WR 146: 90*
[808 Newton St., Seattle, Wash.] Sounds originating on or echoing from the surface of the earth or ocean may be heard by birds and used for directional orientation during migratory movements.--Courtesy/ Paul A. Stewart.

DeLong, Mrs. W. C. HARRIS' SPARROW BANDING PROJECT. *Inland Bird Banding News* 43(1): 16-19. Jan.-Feb. 1971. *WR 146: 91*
[314 N. Silver, Lamoni, Iowa.] Survival tables for banded Harris' sparrows *(Zonotrichia querula)* are presented.--Courtesy/ Paul A. Stewart.

Gauthreaux, Sidney A., Jr. BEHAVIORAL RESPONSES OF MIGRATING BIRDS TO DAYLIGHT AND DARKNESS: A RADAR AND DIRECT VISUAL STUDY. *Wilson Bull.* 84(2): 136-148, 3 figs. June 1972. *WR 146: 91*
[Clemson Univ., Clemson, S.C.] Spring passerine migrants across the Gulf of Mexico usually arrived in southern Louisiana during the daylight hours, mostly in tight flocks of about 20 birds. Most nocturnal migration was at elevations of 800 to 1600 feet. At night, individual passerines produced fine, dust-like echoes on the radar screen while flocks of shorebirds and waterfowl produced scattered dot echoes.--Courtesy/ Paul A. Stewart.

Georg, P. V. RECOVERIES OF RINGED BIRDS FROM IRAQ. *Bull. Iraq Nat. Hist. Mus.* (Univ. Baghdad) 5(1): 45. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 91*
Banding data are given for *Buteo buteo, Hirundo rustica, Corvus frugilegus, Anas acuta* and *A. clypeata.*

Hickey, Joseph J. SURVIVAL STUDIES OF BANDED BIRDS. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 15. 177 p., 21 figs. Issued June 1952. Reprinted with minor correction 1972. *WR 146: 91*
Previously cited in *WR 70: 51.* Explorations in populations dynamics of the following representative American birds are discussed: Pelecaniformes (double-crested cormorant), Ciconiiformes (black-crowned night heron), Anseriformes (mallard and redhead), Falconiformes (marsh hawk), Charadriiformes (caspian tern), Columbiformes (mourning dove), Strigiformes (barn owl and great horned owl), and Passeriformes (blue jay).

Horstkotte, Erich. UNREGELMÄSSIGKEITEN BEIM ZUG DER NACHTIGALL *(LUSCINIA MEGARHYNCHOS)* IM FRÜHJAHR 1970 UND IHR NEGATIVER EINFLUSS AUF REVIERBESETZUNG UND POPULATIONSDICHTE IN EINEM UNTERSUCHUNGSGELÄNDE DER RAVENSBERGER MULDE (OSTWESTFALEN). [ANOMALIES IN THE MIGRATION OF THE NIGHTINGALE *(LUSCINIA MEGARHYNCHOS)* IN SPRING 1970 AND THEIR NEGATIVE INFLUENCE UPON REGIONAL DISTRIBUTION AND POPULATION DENSITY IN A STUDY AREA OF THE RAVENSBERGER BASIN (EAST WESTPHALIA).] *Ornithol. Mitteil.* 23(7-8): 125-129. July-Aug. 1971. In German. *WR 146: 91*
[Deichstrasse 8, Löhne, Germany.]

Isenmann, P., and A. Schierer. NOTE SUR LES REPRISES DE GRIVES MUSICIENNES *TURDUS PHILOMELOS* ET DE MERLES NOIRS *TURDUS MERULA* NÉS EN ALSACE. [NOTE ON RECAPTURES OF EASTERN SONG THRUSHES *(TURDUS PHILOMELOS)* AND EUROPEAN BLACKBIRDS *(TURDUS MERULA)* BORN IN ALSACE (FRANCE).] *Alauda* 39(2): 98-104, illus. 1971. [From Biol. Abstr. 53(4), 1972. In French with German summ.] *WR 146: 91*
[Cent. Reg. Baguage, 107, Route de Neuhof, Strasbourg, France.]

Kang, Kuo-Wei. FOREIGN RECOVERIES OF HOUSE SWALLOWS BANDED IN EASTERN ASIAN COUNTRIES. *Ostrich* 42(3): 179-189. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 91*
[Cornell Univ., Ithaca, N.Y.] *"Hirundo rustica."*

Kramer, Helmut. ZUM EINFLUG DES MAUERLÄUFERS *(TICHODROMA MURARIA)* IN GEBIETE AUSSERHALB SEINES BRUTAREALS. [ON THE ARRIVAL OF THE WALL-CREEPER *(TICHODROMA MURARIA)* IN AREAS OUTSIDE OF THEIR BREEDING GROUNDS.] *Ornithol. Mitteil.* 20(9): 181-186. Sept. 1968. In German. *WR 146: 91*
[Rheinweg 75, Bonn, Germany.]

Leck, Charles F. WAVE PHENOMENA OF LAND MIGRANTS AT ISLAND BEACH STATE PARK, NEW JERSEY. *Bird-Banding* 43(1): 20-25, 1 fig. Jan. 1972. *WR 146: 92*
[Rutgers Univ., New Brunswick, N.J.] In 162,586 net-hours a total of 179,191 birds were captured, chiefly during fall migration. Largest numbers were captured in October. Fifteen species are listed as the most common migrants netted.—Courtesy/ Paul A. Stewart.

Lutsyuk, O. B., and G. K. Nazarchuk. [POSSIBLE ORIENTATION OF BIRDS BY GEOMAGNETIC FIELD.] *Vestn. Zool.* 5(3): 35-39. 1971. [From Biol. Abstr. 53 (8), 1972. In Russian with English summ.] *WR 146: 92*
[Kiev State Univ., Kiev, USSR.] During autumn 1968 under the artificial star sky of the Kiev planetarium experiments were carried out on *Erithacus rubecula* orientation in artificial magnetic fields. When the star sky was natural but the magnetic field was artificial and sharply different from the geomagnetic one, the birds oriented themselves by astroorientators. When the star sky has an unusual appearance the experimental birds oriented themselves along the direction of the horizontal component of the magnetic field.

Mathew, D. N. A REVIEW OF THE RECOVERY DATA OBTAINED BY THE BOMBAY NATURAL HISTORY SOCIETY'S BIRD MIGRATION STUDY PROJECT. *J. Bombay Nat. Hist. Soc.* 68 (1): 45-84. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 92*

Peppard, J. Wm., and Gary G. Donovan. 1971 MIGRATORY BIRD PROJECT REPORT. *Maine Dep. Inland Fisheries & Game, Game Div. Leafl. Ser.* 4(1). 13 p., illus. Jan. 1972. *WR 146: 92*
Three major changes have been made in the migratory bird hunting regulations: first, two woodcock hunting zones were established; second, the special teal season was continued for the second year; third, the opening of the season on black duck was delayed. The 1971-mid-winter waterfowl inventory is discussed.

Purchase, D. SIXTEENTH REPORT OF THE AUSTRALIAN BIRD-BANDING SCHEME, JULY 1969 TO JUNE 1970. *Australia Commonw. Sci. Ind. Res. Organ. Div. Wildl. Res. Tech. Pap.* 22. p. 3-78, illus. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 92*
[Div. Wildl. Res., CSIRO, Lyneham, Australia.] Full data for 205 selected recoveries from 77 spp. and comments on the significance of the results for some species are given.

Rudy, Carol. AGE RATIOS IN FALL WARBLERS. *Inland Bird Banding News* 43(4): 97-101, 5 figs. July-Aug. 1971. *WR 146: 92*
[Summit Lake, Wis.] Young Nashville and Tennessee warblers do not migrate with adults, but blackpoll warblers seem to travel with old and young birds mixed together.—From concl.

Scherrer, Bruno. MIGRATION ET AUTRES TYPES DE DEPLACEMENTS DE LA MESANGE NOIRE *PARUS ATER* EN TRANSIT AU COL DE LA GOLEZE. I. [MIGRATION AND OTHER TYPES OF MOVEMENTS OF THE COAL TIT *PARUS ATER* IN TRANSIT OF LA GOLEZE PASS. I.] *Terre Vie* 26(1): 54-97, 22 figs. 1972. In French with English summ. *WR 146: 92*
[Centre d'Etudes Ornithol. Bourgogne, Dijon, France.] Analysis of the 15,525 coal tits captured during 1965-70 at La Golèze pass in the French Alps.

Scherrer, Bruno. MIGRATION ET AUTRES TYPES DE DEPLACEMENTS DE LA MESANGE NOIRE *PARUS ATER* EN TRANSIT AU COL DE LA GOLEZE. II. [MIGRATION AND OTHER TYPES OF MOVEMENTS OF THE COAL TIT *PARUS ATER* IN TRANSIT OF LA GOLEZE PASS. II.] *Terre Vie* 26(2): 257-313, 24 figs. Apr.-June 1972. In French with English summ. *WR 146: 92*
This part deals primarily with the migration patterns and the physiological state of *Parus ater* preceding and following their movements.

Sedgwick, Eric H. MOVEMENTS OF *PARDALOTUS SUBSTRIATUS*, RED-TIPPED PARDALOTE, IN WESTERN AUSTRALIA. *West. Australian Nat.* 12(1): 1-4. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 93*

[Harvey, West. Australia.] Notes on the occurrence and activities of the red-tipped pardalote in 10 localities in the southwest of Western Australia indicate that the species is, wholly or in part, migratory.

Tree, A. J. NOTES ON PALAEARCTIC MIGRANTS IN THE EASTERN CAPE. *Ostrich* 42 (3): 198-204. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 93*

[Poste Restante, Grahamstown, South Africa.] Observations were made on some 32 spp. of migrants from Feb. 1966 to Feb. 1969.

Wiltschko, Wolfgang, and Hiltrud Höck. ORIENTATION BEHAVIOR OF NIGHT-MIGRATING BIRDS (EUROPEAN ROBINS) DURING LATE AFTERNOON AND EARLY MORNING HOURS. *Wilson Bull.* 84(2): 149-163, 5 figs. June 1972. *WR 146: 93*

[Zool. Inst. Univ., Frankfurt am Main, Germany.] When the magnetic field was artificially changed, European robins *(Erithacus rubecula)* in orientation cages, during the morning hours, selected their migratory direction according to the direction of the magnetic field. During late afternoon and evening in both spring and fall the birds showed "nonsense orientation." The nonsense orientation persisted under clear, partly covered, and overcast skies.--Courtesy/ Paul A. Stewart.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Boddam-Whetham, A. D. THE BIRDS OF FRANSHOEK, DISTRICT FICKSBURG, O.F.S. *South African Avifauna Ser. Percy FitzPatrick Inst. African Ornithol.* no. 80. 27 p. 1972. Price 30¢. *WR 146: 93*

Browning, M. Ralph, and William W. English. BREEDING BIRDS OF SELECTED OREGON COASTAL ISLANDS. *Murrelet* 53(1): 1-7, 3 figs. Jan.-Apr. 1972. *WR 146: 93*

[4137 N. 21st Rd., Apt. A, Arlington, Va.] Summary: Ten Oregon coastal island groups were surveyed during the breeding seasons of 1966 and 1967. Islands selected are those that have soil which breeding species can use for nesting. Data from aerial surveys by the U.S. Fish and Wildlife Service show the estimated number of non-burrowing breeders. Twelve species were found breeding. Fork-tailed Petrels were discovered breeding on Hunter Island only. Leach's Petrels breed on all of the islands investigated. Approximately 1,011,600 Leach's Petrels breed on these islands. Breeding densities are found to remain fairly constant within a colony as well as from colony to colony. The well-delineated *Phalaris* habitat with almost nonexistent ecotone probably contributes to the constant densities. Song Sparrows, the only passerine regularly observed, may breed on Goat Island and possibly other offshore islands.

Canadian Wildlife Service. CANADIAN BIRD NAMES / FRENCH, ENGLISH AND SCIENTIFIC. *Canadian Wildl. Serv. Occas. Pap.* no. 2. Third edition. 32 p. 1972. In English and French. *WR 146: 93*

Sixty-five species are listed.

Clancey, P. A. A HANDLIST OF THE BIRDS OF SOUTHERN MOZAMBIQUE. *Mem. Inst. Invest. Cient. Mocambique Ser. A Cienc. Biol.* 10. p. 145-303, illus. 1969/1970. [From Biol. Abstr. 53(8), 1972.] *WR 146: 93*

[Durban Mus., Durban, South Africa.]

Constant, P., A. Goulliart, B. Legrand, and A. Richard. AVIFAUNE DU LITTORAL BOULONNAIS. [AVIFAUNA OF THE BOULOGNE LITTORAL (FRANCE).] *Alauda* 39(2): 145-149. 1971. [From Biol. Abstr. 53(4), 1972. In French.] *WR 146: 93*

[Inst. Biol. Marit., Sta. Wimereux, Pas-de-Calais, France.]

duPont, John E. NOTES ON PHILIPPINE BIRDS (NO. 2) / BIRDS OF TICAO. *Nemouria Occas. Pap. Del. Mus. Nat. Hist.* no. 6. 13 p. 27 Apr. 1972. *WR 146: 94*
[Kennett Pike, Greenville, Del.]

duPont, John E. NOTES ON PHILIPPINE BIRDS (NO. 3) / BIRDS OF MARINDUQUE. *Nemouria Occas. Pap. Del. Mus. Nat. Hist.* no. 7. 14 p. 27 June 1972. *WR 146: 94*
Lists 96 spp. in 43 families.

Edington, J. M., and M. A. Edington. SPATIAL PATTERNS AND HABITAT PARTITION IN THE BREEDING BIRDS OF AN UPLAND WOOD. *J. Anim. Ecol.* 41(2): 331-357, 9 figs. + 1 pl. June 1972. *WR 146: 94*
[Univ. Coll., Cardiff, Wales.] Major topics of discussion: spatial patterns in the breeding season, temporal patterns in the breeding season, and functional significance of spatial patterns.

Gatter, Wulf. DIE VOGELWELT DER KREISE NUERTINGEN UND ESSLINGEN. [BIRDS OF THE NUERTINGEN AND ESSLINGEN DISTRICTS.] *Jahresh. Ges. Naturkd. Wuerttemb.* 125: 158-264, illus. 1970. [From Biol. Abstr. 53(9), 1972. In German.] *WR 146: 94*
[Hans-Thoma-Weg 31, Kiechheim/Tech, Germany.]

Hodgson, C. J. THE BIRDS OF THE CHIMANIMANI MOUNTAINS, RHODESIA. *South African Avifauna Ser. Percy FitzPatrick Inst. African Ornithol.* no. 77. 31 p. 1971. Available at 40¢ from the Percy FitzPatrick Inst. African Ornithol., Univ. Cape Town, Rondebosch, Cape, South Africa. *WR 146: 94*
[Wye Coll., near Ashford, Kent, England.] Annotated list of many spp. found in the area of the Chimanimani Mountains.

Hubbard, John P. NOTES ON ARIZONA BIRDS. *Nemouria Occas. Pap. Del. Mus. Nat. Hist.* no. 5. 22 p. 24 Apr. 1972. *WR 146: 94*
[Kennett Pike, Greenville, Del.] Provides information supplemental to the book on Arizona birds by Phillips, Marshall, and Monson (1964) and is based primarily on material collected in the first quarter of this century.

Husain, K. Z., and S. U. Sarker. THE OCCURRENCE OF SOME BIRDS IN BANGLADESH. *Bull. British Ornithol. Club* 92(3): 40-42. Apr. 1972. *WR 146: 94*
Summary: On the basis of a recent collection, sixteen forms are recorded from Bangladesh, where the occurrence of none of them had been previously fully authenticated.

Jackson, M. C. A. RANDOM NOTES ON BIRDS OF KERALA. *J. Bombay Nat. Hist. Soc.* 68(1): 107-114. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 94*

Johnson, E. D. H. OBSERVATIONS ON THE BIRDS OF THE UPPER BLUE NILE BASIN. *Bull. British Ornithol. Club* 92(3): 42-49. Apr. 1972. *WR 146: 94*
The Upper Blue Nile basin was visited during August and September 1968. Geography and topography are briefly mentioned. Selected species are discussed in relation to past literature.--From summ.

Knecht, Sigrid, and Ulrich Scheer. DIE VOEGEL DER AZOREN. [THE BIRDS OF THE AZORES.] *Bonn. Zool. Beitr.* 22(3/4): 275-296, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 94*
[Hunterstalst. 68, Freiburg, Germany.] Observations of the breeding birds were performed during a 4 month journey of the 9 Azores islands. The data are summed up in a detailed species-list supplemented by ecological notes as well as some comments upon the breeding behavior.

Kobayashi, Keisuke. [OBSERVATION OF THE BIRDS ON MARIANA ISLANDS.] *Tori Bull. Ornithol. Soc. Japan* 20(88): 24-29. 1970. [From Biol. Abstr. 53(4), 1972. In Japanese with English summ.] *WR 146: 94*
An annotated list of 18 spp. is given.

Kucera, L. ERGÄNZUNGEN ZU: DIE VÖGEL DES MITTLEREN BÖHMERWALDES. [SUPPLEMENT TO: THE BIRDS OF THE MIDDLE BOHEMIAN FORESTS.] *Ornithol. Mitt.* 23(12): 235-237, illus. Dec. 1971. In German. *WR 146: 95*
[Susice, Czechoslovakia.]

Lassen, Elsebeth, and Jes Asmussen. FUGLENE PÅ ÆGHOLM I STAVNS FJORD, SAMSØ. [BIRDS ON ÆGHOLM IN STAVN FIORD, SAMSØ.] *Flora Fauna* 77(3): 89-91, illus. 1971. [From Biol. Abstr. 53(12), 1972. In Norwegian.] *WR 146: 95*
[Kleinsgade 1, Copenhagen, Denmark.]

Lebreton, Philippe, Michel Czajkowski, and Bernard Chabert. COMPTE RENDU ORNITHOLOGIQUE ANNUEL DE L'AUTOMNE 1968 À L'ÉTÉ 1969 DANS LA RÉGION RHÔNE-ALPES (SUITE ET FIN). [ORNITHOLOGICAL PROCEEDINGS IN THE RHONE-ALPS REGION FROM AUTUMN 1968 TO SUMMER 1969 (CONTINUED).] *Bull. Mens. Soc. Linn. Lyon* 49(5): 125-129. 1971. [From Biol. Abstr. 53(11), 1972. In French.] *WR 146: 95*
A systematic list of the species of birds observed in the Rhone-Alps region of France from autumn 1968 to summer 1969 is given. Of the 41 spp. listed, the greatest number belong to the Paridae, buntings, Fringillae and Corvidae.

Lemaire, F. L'AVIFAUNE D'UNE COMMUNE SEMI-URBAINE: JUPILLE S/MEUSE (PROV. LIÈGE). [THE AVIFAUNA OF A SEMI-URBAN COMMUNITY: JUPILLE S/MEUSE (LIÈGE PROVINCE).] *Aves* 7(5/6): 129-156, illus. 1970. [From Biol. Abstr. 53(6), 1972. In French.] *WR 146: 95*
[194 rue Bois-de-Breux, 4500 Jupille, Belgium.] A presentation of the sites in Jupille and an ecological sketch of the relationships existing between the different biotopes and species of birds that reproduce there are given. A list of nesting and non-nesting birds consists of 112 spp., 60 of which are nesters.

Linehan, John T., and Robert E. Jones. THE DELAWARE BIRD LIST--COMPILED FROM PUBLISHED RECORDS. *Soc. Nat. Hist. Del.* 12 p. 1971. *WR 146: 95*
Status of 351 spp. of birds in Delaware.

Mahler, Ulrich, and Susanne Schmehl. AVIFAUNISTISCHE BEOBACHTUNGEN BEI WAGHÄUSEL (OBERRHEIN. TIEFEBENE) UND IN DER HARDT ZWISCHEN HOCKENHEIM UND WALLDORF. [AVIFAUNISTIC OBSERVATIONS AT WAGHÄUSEL (UPPER RHINE PLAINS) AND IN THE AREA BETWEEN HOCKENHEIM AND WALLDORF.] *Ornithol. Mitt.* 23(11): 217-218. Nov. 1971. In German. *WR 146: 95*
[Pirsch-Weg 3, Ziegelhausen, Germany.]

Mangelsdorf, Peter. ORNITHOLOGISCHE BEOBACHTUNGEN WÄHREND EINER REISE MIT FS "FRIEDRICH HEINCKE" IM SEEGEBIET WESTLICH DER BRITISCHEN INSELN IN DER ZEIT VOM 1. JUNI BIS 18. JUNI 1971. [ORNITHOLOGICAL OBSERVATIONS DURING A JOURNEY WITH THE "FRIEDRICH HEINCKE" IN THE WATERS WESTERLY OF THE BRITISH ISLES DURING 1-18 JUNE 1971.] *Ornithol. Mitt.* 24(1): 12-16, 1 fig. Jan. 1972. In German. *WR 146: 95*
[Biol. Anst. Helgoland, Helgoland, Germany.] "Seabirds."

Markiewicz, Józef. ORNITOFAUNA PÓŁNOCNEJ CZEŚCI WYŻYNY KRAKOWSKO-CZESTOCHOWSKIEJ. [THE ORNITHOFAUNA OF THE NORTHERN PART OF WYŻYNA SANDOMIERSKA (THE SANDOMIERZ UPLAND).] *Chrońmy Przyr. Ojczystą* 26(1): 34-36. Jan.-Feb. 1970. In Polish. *WR 146: 95*

Mester, Horst. DIE VOGELWELT DER PITYUSEN. [THE BIRDS OF THE PITYUSAE ISLANDS (BALEARIC ISLANDS).] *Bonn. Zool. Beitr.* 22(1/2): 28-89, illus. 1971. [From Biol. Abstr. 53(6), 1972. In German with English and Spanish summ.] *WR 146: 95*
[Im Rueschenfeld 57, 4401 Roxel, Germany.]

Michels, Heinz. NOTIZEN ZUR VOGELWELT IM RAUM ULCINJ (MONTENEGRO). [NOTES ON THE AVIFAUNA IN THE ULCINJ AREA (MONTENEGRO).] *Ornithol. Mitt.* 24(3): 43-46. Mar. 1972. In German. *WR 146: 95*
[Morper Strasse 60/24, Düsseldorf-Gerresheim, Germany.]

Müller, Horst. AVIFAUNISTISCH-ÖKOLOGISCHE BEOBACHTUNGEN AUF DER INSEL BORKUM. [AVIFAUNISTIC-ECOLOGICAL OBSERVATIONS ON THE ISLAND OF BORKUM.] *Ornithol. Mitt.* 23(5-6): 91-100, illus. May-June 1971. In German. *WR 146: 96*
Annotated list of 83 spp.

Nelson, Bryan. GALAPAGOS / ISLANDS OF BIRDS. *William Morrow & Co., Inc.* (New York). xxi + 338 p., 56 figs. + 57 pls., 6 x 9 in. 1968. Price $7.95. *WR 146: 96*
"Bryan Nelson, a young zoologist, and his wife spent an entire year on two uninhabited islands of the [Galapagos] group. This book describes their months of isolation and their detailed investigations into the life history and behavior of the sea birds--white boobies, blue-foots and red-foots, gulls, frigates and albatrosses, and the amazing colonies of piqueros and guanay cormorants on the Peruvian Guano Islands.... A significant contribution to ornithology, it is, above all, an enjoyable book for both professional naturalists and amateurs."

Paton, Joan B. PEARSON ISLAND EXPEDITION 1969: VI. BIRDS. *Trans. Roy. Soc. S. Australia* 95(3): 149-153. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 96*
[Univ. Adelaide, Adelaide, South Australia.] An annotated list is given of the 27 spp. of birds recorded on the Pearson Islands by the expedition of Jan. 1969. A tabulated list of all records of birds from the islands is also given.

Pöllet, Karlheinz. BEMERKENSWERTE BRUTVÖGEL UND DURCHZÜGLER AM KAUERLACHER WEIHER (MITTELFRANKEN). [NOTEWORTHY BREEDING BIRDS AND MIGRANTS AT KAUERLACHER POND (BAVARIA).] *Ornithol. Mitt.* 23(4): 68-70. Apr. 1971. In German. *WR 146: 96*
[Gilardistrasse 14, Allersberg, Germany.]

Puget, A. OBSERVATIONS SUR L'AVIFAUNE NIDIFICATRICE DE L'ÉTANG DE BINIHESAR (CHAMANE QALA HACHMATRAN) DANS LA PROCHE BANLIEUE DE KABOUL EN AFGHANISTAN. [OBSERVATIONS ON THE NIDIFYING AVIFAUNA OF BINIHESAR POND (CHAMANE QALA HACHMATRAN) IN THE NEAR SUBURBS OF KABOUL IN AFGHANISTAN.] *Alauda* 39(2): 139-144, illus. 1971. [From Biol. Abstr. 53(4), 1972. In French.] *WR 146: 96*
[Cent. Rech., Toxicites, 205, Route de Narbonne, Toulouse, France.]

Raventós, P. Mestre. CONTRIBUCIÓN A UN ESTUDIO ORNITOLÓGICO DEL VALLE DE CAMPRODÓN (GERONA). [CONTRIBUTION TO AN ORNITHOLOGICAL STUDY OF THE VALLEY OF CAMPRODÓN (GERONA, SPAIN).] *Misc. Zool.* 3(1): 65-76. 1971. [From Biol. Abstr. 53(9), 1972. In Spanish.] *WR 146: 96*
Collection notes are given on 72 spp., indicating relative abundance. In some cases the size of clutch and dimensions of the eggs are given.

Rettig, Klaus. DIE BRUTVOGELWELT AM GROSSEN MEER IN OSTFRIESLAND. [THE BREEDING BIRD FAUNA ON GROSSEN MEER IN EAST FRIESLAND.] *Ornithol. Mitt.* 23(5-6): 105-113, 13 figs. May-June 1971. In German. *WR 146: 96*
[Danziger Strasse 11, Emden, Germany.]

Salvan, J. UNE VISITE SUR LES ÎLOTS AU SUD DE TAMATAVE (MADAGASCAR). [A VISIT TO THE ISLANDS SOUTH OF TAMATAVE (MADAGASCAR).] *Alauda* 39(3): 213-222, illus. 1971. [From Biol. Abstr. 53(10), 1972. In French with German and English summ.] *WR 146: 96*
[131 Rainbow Ave., Fort Benning, Ga.] In May 1971, at Nosy Dombala, an islet 20 mi south of Tamatave, a tern colony of 5.5 pairs of *Sterna fuscata*, 50 pairs of *S. dougallii*, 60 pairs of *S. bergii*, and 100 pairs of *Anous stolidus rousseaui* were found breeding. *S. fuscata* and *A. s. rousseaui* had been thought to be rare visitors to Madascar.

Schipper, Wim. NOTES SUR L'AVIFAUNE DE LA ZONE HUMIDE DE PIERREPONT-SISSONNE (LAONNOIS-AISNE) II. [NOTES ON THE AVIFAUNA OF THE MARSHY AREA OF PIERREPONT-SISSONNE (LAONNOIS-AISNE) II.] *Alauda* 39(3): 204-208. 1971. [From Biol. Abstr. 53(10), 1972. In French.] *WR 146: 97*

A reinventory (April-June 1970) of the avifauna of the Pierrepont-Sissonne region revealed 75 spp. of nesting birds.

Schmidt-Koenig, Klaus. EIN VERSUCH THEORETISCH MOEGLICHE NAVIGATIONSVERFAHREN VON VOEGELN ZU KLASSIFIZIEREN UND RELEVANTE SINNESPHYSIOLOGISCHE PROBLEME ZU UMREISSEN. [AN ATTEMPT TO CLASSIFY THEORETICALLY POSSIBLE MEANS OF ORIENTATION IN BIRDS AND TO DISCUSS RELEVANT SENSORY ASPECTS.] *Verh. Dtsch. Zool. Ges.* 64: 243-245. 1970. [From Biol. Abstr. 53(12), 1972. In German with English summ.] *WR 146: 97*

Schnebel, Gunther. DIE BRUTVÖGEL DES PENKEFITZER SEES (OSTNIEDERSACHSEN) UNTER BESONDERER BERÜCKSICHTIGUNG DER SCHILFZONE. [THE BREEDING BIRDS OF THE PENKEFITZER LAKES (EAST LOWER SAXONY) WITH SPECIAL CONSIDERATION OF THE REED *(PHRAGMITES)* ZONE.] *Ornithol. Mitt.* 23(11): 214-216. Nov. 1971. In German. *WR 146: 97*

[Ringstrasse 9, Velzen, Germany.]

Simeonov, Simeon D. [STUDIES ON THE NESTING BIRDS IN THE "PSEUDOMACCHIE" OF THE PIRIN MOUNTAINS (RHODOPE MOUNTAIN RANGE, BULGARIA).] *God. Sofii. Univ. Biol. Fak. Kn. 1 Zool. Fiziol. Biokhim. Zhivotn.* 63: 15-26, illus. 1970. [From Biol. Abstr. 53(8), 1972. In Bulgarian with German summ.] *WR 146: 97*

[Univ. Sofia, Sofia, Bulgaria.]

Tarboton, W. A. BIRDS OF THE MOSDENE NATURE RESERVE, NABOOMSPRUIT. *South African Avifauna Ser. Percy FitzPatrick Inst. African Ornithol.* no. 78. 51 p. 1971. Available at 40¢ from the Percy FitzPatrick Inst. African Ornithol., Univ. Cape Town, Rondebosch, Cape, South Africa. *WR 146: 97*

In a broad classification, the birds of the area are 26% aquatic, 54% resident, and 20% migrant.

Trettau, Waldemar. ORNITHOLOGISCHE BEOBACHTUNGEN AUF DER INSEL GIGLIO UND ERGÄNZUNGEN ZUR VOGELWELT DER INSEL ELBA UND CAPRAIA. [ORNITHOLOGICAL OBSERVATIONS ON GIGLIO ISLAND AND THE RESTORATION OF THE AVIFAUNA ON ELBA AND CAPRAIA ISLANDS (TUSCAN ARCHIPELAGO).] *Ornithol. Mitt.* 23(5-6): 101-104. May-June 1971. In German. *WR 146: 97*

Vernon, Carl. A LIST OF THE BIRDS OF BISLEY VALLEY, PIETERMARITZBURG. *South African Avifauna Ser. Percy FitzPatrick Inst. African Ornithol.* no. 79. 23 p. 1972. Price 30¢. *WR 146: 97*

Vernon, C. J. THE BIRDS OF SCOTTSVILLE, PIETERMARITZBURG, NATAL. *South African Avifauna Ser. Percy FitzPatrick Inst. African Ornithol.* no. 81. 22 p. 1972. Price 30¢. *WR 146: 97*

Vielliard, J. DONNÉES BIOGÉOGRAPHIQUES SUR L'AVIFAUNE D'AFRIQUE CENTRALE. [BIOGEOGRAPHIC DATA ON THE AVIFAUNA OF CENTRAL AFRICA.] *Alauda* 39(3): 227-248. 1971. [From Biol. Abstr. 53(10), 1972. In French with English summ.] *WR 146: 97*

[284, Blvd. Raspail, Paris, France.] A systematically and faunistically revised checklist of the species of birds in the Republic of Chad is given.

Watson, Donald. BIRDS OF MOOR AND MOUNTAIN. *Scottish Academic Press* (Edinburgh, Scotland and London, England). xvi + 150 p. + 38 pls. 8.5 x 11 in. 1972. Price £5.50. *WR 146: 97*

"This book discusses in detail all the characteristic birds of moorland and open hill country in Britain and Ireland, including those associated with hill-lochs and marshes. The narrative essays relate personal experience to past and

contemporary studies in a fascinating field of ornithology, while detailed notes on the appearance and habits of each species are given separately. This combination of personal comment and exact description conveys the experience of many years of observation in a book notable for its quietly individual style."

Weir, Ronald D. SPRING MIGRATION AT PRINCE EDWARD POINT, ONTARIO. *Canadian Field Nat.* 86(1): 3-16, 1 fig. Jan.-Mar. 1972. *WR 146: 98*
[Royal Military Coll., Kingston, Ontario, Canada.]

Winterbottom, J. M. THE ECOLOGICAL DISTRIBUTION OF BIRDS IN SOUTHERN AFRICA. *Monogr. Percy FitzPatrick Inst. African Ornithol.* no. 1. 82 p., 20 pls. 1972. *WR 146: 98*
Description of the distribution of bird species in South Africa by habitats. Characteristics of each species are listed.

Witt, Hans. ORNITHOLOGISCHE BEOBACHTUNGEN AUF DEN KANAREN. [ORNITHOLOGICAL OBSERVATIONS ON THE CANARY ISLAND.] *Ornithol. Mitt.* 23(7-8): 145-148, [1 fig.]. July-Aug. 1971. In German. *WR 146: 98*
[K. Finkelnburgstrasse 1, Bonn-Godesberg, Germany.] Annotated list of 50 spp.

Zingel, Dieter. WINTERBEOBACHTUNGEN AUF MALLORCA. [WINTER OBSERVATIONS AT MALLORCA.] *Ornithol. Mitt.* 23(11): 207-213, illus. Nov. 1971. In German. *WR 146: 98*
[Sickingenstrasse 1, Wiesbaden-Biebrich, Germany.] Annotated list of 95 spp.

BIRDS--POPULATIONS & FLUCTUATIONS

Cordonnier, Pierre. VARIATIONS SAISSONNIÈRES DE LA COMPOSITION DE L'AVIFAUNE DU MARAIS DE LAVOURS (AIN). [SEASONAL VARIATIONS IN THE AVIFAUNA COMPOSITION OF THE LAVOURS SWAMP (AIN).] *Alauda* 39(3): 169-203, illus. 1971. [From Biol. Abstr. 53(10), 1972. In French with English summ.] *WR 146: 98*
[Cent. Ornithol. Rhône-Alpes, quai Claude-Bernard, Lyon, France.]

Davis, Russel S. SURVIVAL RATES OF BARN SWALLOWS AT GLENHAVEN FARM. *Inland Bird Banding News* 43(1): 13-15. Jan.-Feb. 1971. *WR 146: 98*
[Clayton, Ill.] The life expectancy of barn swallows *(Hirundo rustica)* is six years.--Courtesy/ Paul A. Stewart.

Diamond, Jared M. COMPARISON OF FAUNAL EQUILIBRIUM TURNOVER RATES ON A TROPICAL ISLAND AND A TEMPERATE ISLAND. *Proc. Nat. Acad. Sci. USA* 68(11): 2742-2745. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 98*
[Univ. Calif., Med. Cent., Los Angeles.] Rates of immigration and extinction of bird species on a tropical island, Karkar, in the southwest Pacific Ocean, were estimated from surveys made in 1914 and in 1969.

Erskine, Anthony J. THE CO-OPERATIVE BREEDING BIRD SURVEY IN CANADA, 1971. *Canadian Wildl. Serv. Prog. Notes* no. 26. 31 p. May 1972. In French and English. *WR 146: 98*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Analyses of attempt to detect and measure year-to-year changes in numbers of birds (chiefly song birds) for four major regions, together comprising most settled areas in Canada. Sustained downward trends are infrequent and inconclusive. This study, originated by the United States Fish and Wildlife Service, is co-ordinated in Canada by the Canadian Wildlife Service.

Falk, Lloyd L. BIRD CENSUS SURVEYS OF THE HOOPES RESERVOIR AREA, NEW CASTLE COUNTY, DELAWARE, DURING 1943, 1944, 1945, AND 1964. *Delmarva Ornithol. Soc. Monogr.* no. 1. 87 p., 29 figs. 1971. Available from Delmarva Ornithol. Soc., c/o Mr. Philip K. Klabunde, 2715 Bardell Dr., Wilmington, Del. Price $1.75. *WR 146: 98*
Summary: The results of bird counts on 210 similarly conducted surveys along the same route around Hoopes Reservoir, New Castle County, Delaware, during the

four years 1943, 1944, 1945, and 1964 were presented. A total of 187 species were found. An assessment was made of the changes in status of species during the 20 years between the two main survey periods.

Ghent, Arthur W. A GRAPHIC COMPUTATION PROCEDURE FOR KENDALL'S TAU SUITED TO EXTENSIVE SPECIES-DENSITY COMPARISONS. *Am. Midl. Nat.* 87(2): 459-471, 1 fig. Apr. 1972. *WR 146: 99*
[Univ. Ill., Urbana.] A rapid computation for Kendall's *tau* is presented in the context of a species-density comparison involving 53 bird species (with extensive tied frequencies) in two spruce-fir communities.--From abstr.

Hakala, Antero. A QUANTITATIVE STUDY OF THE BIRD FAUNA OF SOME OPEN PEATLANDS IN FINLAND. *Ornis Fenn.* 48(1): 1-11. 1971. [From Biol. Abstr. 53(10), 1972. In English with Finnish summ.] *WR 146: 99*
[Hoikantie 14-22 C 20, Oulu, Finland.]

Harmata, Wincenty. ZMIANY W AWIFAUNIE KRAKOWA WYWOŁANE DZIAŁALNOŚCIA CZŁOWIEKA. [CHANGES IN THE AVIFAUNA OF CRACOW INDUCED BY MAN'S ACTIVITY.] *Chrońmy Przyrodę Ojczystą* 28(1): 21-27. 4 figs. Jan.-Feb. 1972. In Polish with English summ. *WR 146: 99*

Mayfield, Harold F. THIRD DECENNIAL CENSUS OF KIRTLAND'S WARBLER. *Auk* 89 (2): 263-268, 1 fig. Apr. 1972. *WR 146: 99*
[9235 River Rd., Waterville, Ohio.] The total count of singing male Kirtland's warblers fell to 201 in 1971 as compared with a count of 500 in 1961.--Courtesy/ Paul A. Stewart.

Milstead, William W., and Richard F. Myers. INTERGENERIC COMPETITION AMONG THREE BANGLADESHIAN BIRDS. *Am. Midl. Nat.* 87(2): 536-538. Apr. 1972. *WR 146: 99*
[Univ. Tex., Austin.] Abstract: Active interspecific competition was exhibited by the common mynah *(Acridotheres tristis)* towards the brahminy mynah *(Sturnus pogodarum)* and the black drongo *(Dicurus adsimilis)* by its aggressive social behavior. This allowed only one species of mynah to attend a herd of cattle at a time.

Pikula, Jiří. DIE VARIABILITÄT DER EIER DER POPULATION *TURDUS PHILOMELOS*, BREHM 1831 IN DER ČSSR. [THE VARIABILITY OF EGGS OF THE POPULATION OF *TURDUS PHILOMELOS* IN CZECHOSLOVAKIA.] *Zool. Listy* 20(1): 69-83, 2 figs. 1971. In German with English summ. *WR 146: 99*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Savidge, Irvin R., and David E. Davis. BIRD POPULATIONS IN AN IRRIGATED WOODLOT, 1963-1967. *Bird-Banding* 42(4): 249-263, 6 figs. Oct. 1971. *WR 146: 99*
[N.C. State Univ., Raleigh.] Irrigation of a woodlot with sewage effluent stimulated plant growth but did not change the bird population.--Courtesy/ Paul A. Stewart.

Schnebel, Gunther. ERGEBNISSE EINER WINTERVOGELZÄHLUNG IN DER DUMME-NIEDERUNG BEI BERGEN (OSTNIEDERSACHSEN). [RESULTS OF A WINTER BIRD COUNT IN THE DUMME LOWLAND NEAR BERGEN (EAST LOWER SAXONY).] *Ornithol. Mitt.* 24(3): 48-50. Mar. 1972. In German with English summ. *WR 146: 99*
[Ringstrasse 9, Velzen, Germany.]

Seber, G.A.F. ESTIMATING SURVIVAL RATES FROM BIRD-BAND RETURNS. *J. Wildl. Manage.* 36(2): 405-413. Apr. 1972. *WR 146: 99*
[Auckland Univ., New Zealand.] A number of methods used in the past for estimating survival rates for both the age- and time-dependent models are discussed. It is shown both algebraically and by means of worked examples, that unless t is much greater than s, so that virtually all the birds are dead by the end of the experiment, all the methods discussed here tend to underestimate the

true rates. The methods of Lack (1943) and Haldane (1953, 1955), based on a constant survival rate, are discussed and Haldane's method is generalized to the case when $t \neq s$. A regression method applicable to this situation is also discussed briefly.--From abstr.

Stewart, Robert M. A SUMMARY OF BIRD SURVEYS IN CALIFORNIA 1947-1971. *Point Reyes Bird Observatory Newsletter* no. 21. p. 2-3. Apr. 1972. *WR 146: 100*

Whitley, Gilbert P. FIELD NOTES ON BIRDS BY THOMAS CARTER. *West. Australian Nat.* 12(2): 41-44. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 100*
[Australian Mus., Sydney, Australia.] Field notes on Australian bird occurrence in 1922 areas now radically changed and were published for purposes of comparison with current conditions.

Winterbottom, J. M. SEASONAL CHANGES IN THE PASSERINE AVIFAUNA OF THE CAPE MACCHIA. *Ostrich* 42: 291-293. 1971. *WR 146: 100*
[Univ. Cape Town, Cape Town, South Africa.]

BIRDS--ECONOMICS, CONTROL, MORTALITY

Crawford, Robert L. PREDATION ON BIRDS KILLED AT TV TOWER. *Oriole* 36(4): 33-35. Dec. 1971. *WR 146: 100*
[Tall Timbers Res. Sta., Rt. 1, Box 160, Tallahassee, Fla.] A study conducted at the WCTV tower on Tall Timbers Research Station in northern Lion County, Florida, from 1955 through 1966.

Herman, Steven G. THE FUNCTIONAL AND NUMERICAL RESPONSES OF THE CASSIN FINCH, *CARPODACUS CASSINII* BAIRD, TO EPIDEMIC NUMBERS OF THE LODGEPOLE NEEDLEMINER, *COLEOTECHNITES MILLERI* (BUSCK). *Wasmann J. Biol.* 29(1): 71-80. 1971. [From Biol. Abstr. 53(1), 1972.] *WR 146: 100*
[Univ. Calif., Berkeley.]

Kilham, Lawrence. DEATH OF RED-BREASTED NUTHATCH FROM PITCH AROUND NEST HOLE. *Auk* 89(2): 451-452. Apr. 1972. *WR 146: 100*
[Dartmouth Med. School, Hanover, N.H.] *"Sitta canadensis."*--Courtesy/ Paul A. Stewart.

Schoennagel, Erich. 100 000 AUSTERNFISCHER *(HAEMATOPUS OSTRALEGUS)* AUF DER KÄLTEFLUCHT. [ONE HUNDRED THOUSAND EUROPEAN OYSTERCATCHERS *(HAEMATOPUS OSTRALEGUS)* DURING A COLD SPELL.] *Ornithol. Mitt.* 24(3): 39-40, illus. Mar. 1972. In German. *WR 146: 100*
[Am Meisenbrink 14, Hameln, Germany.] Noteworthy January observation made on the East Frisian shoals.

Shook, Roland S., and Paul H. Baldwin. WOODPECKER PREDATION ON BARK BEETLES IN ENGELMANN SPRUCE LOGS AS RELATED TO STAND DENSITY. *Canadian Entomol.* 102(11): 1345-1354, 1 fig. Nov. 1970. *WR 146: 100*
[Colo. State Univ., Fort Collins.] In selectively logged areas spruce beetle populations can be reduced to a greater degree by woodpeckers than in clearcut or uncut areas.

Wright, E. N. BIRDSTRIKES AND THE THIRD LONDON AIRPORT. *Animals* 14(4): 151-155, illus. Apr. 1972. *WR 146: 100*
Discussion of the potential hazards confronting the aircraft using the proposed new airport at Foulness, London, England.

Zimmerli, E. FISCHNETZE GEGEN VOGELFRASS. [FISHNETS VERSUS BIRD DEPREDATIONS.] *Ornithol. Mitt.* 20(12): 248-249, 1 fig. Dec. 1968. In German. *WR 146: 100*
[Birkenweg, Zofingen, Switzerland.]

BIRDS--PARASITES & DISEASES

Broek, Elisabeth van den, and J. Jansen. PARASITES OF ANIMALS IN THE NETHERLANDS: V. ENDOPARASITES OF WILD BIRDS. *Ardea* 59(1/2): 28-33. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 101*
[Univ. Amsterdam, Amsterdam, Netherlands.] A survey is given of the helminths found during parasitological examination of wild birds in Netherlands between 1964 and 1971.

Pence, Danny B. *CYTONYSSUS TROGLODYTI* SP. N. (ACARINA: CYTODITIDAE) FROM THE NASAL PASSAGES OF THE CAROLINA WREN, *THRYOTHORUS LUDOVICIANUS*. *J. Parasitol.* 58(2): 336-338, 6 figs. Apr. 1972. *WR 146: 101*
[La. State Univ. Med. Cent., New Orleans.]

Pence, Danny B. *PICICNEMIDOCOPTES DRYOCOPAE* GEN. ET SP. N. (ACARINA: KNEMIDOKOPTIDAE) FROM THE PILEATED WOODPECKER, *DRYOCOPUS PILEATUS* L., WITH A NEW HOST RECORD FOR *KNEMIDOKOPTES JAMAICENSIS* TURK. *J. Parasitol.* 58(2): 339-342, 6 figs. Apr. 1972. *WR 146: 101*
[La. State Univ. Med. Cent., New Orleans.]

Schmidt, Gerald D., and John M. Kinsella. TWO NEW SPECIES OF *SCIADIOCARA* SKRJABIN, 1915 (NEMATODA: SCHISTOROPHIDAE) FROM BIRDS IN FLORIDA. *J. Parasitol.* 58(2): 271-274, 11 figs. Apr. 1972. *WR 146: 101*
[Univ. Northern Colo., Greeley.] *"Anas platyrhynchos fulvigula, Gallinula chloropus cachinnans* and *Porphyrula martinica."*

Stabler, Robert M., and Nancy J. Kitzmiller. *ISOSPORA PETROCHELIDON* SP. N. (PROTOZOA: EIMERIIDAE) FROM THE CLIFF SWALLOW, *PETROCHELIDON PYRRHONOTA*. *J. Protozool.* 19(2): 248-251, 15 figs. May 1972. *WR 146: 101*
[Colo. Coll., Colorado Springs.]

GAME BIRDS--GENERAL

Baxter, William L., and Carl W. Wolfe. A COMPARISON OF NESTING COVER UTILIZED BY PHEASANTS AND WATERFOWL. *Nebr. Bird Rev.* 39(4): 66-70. Dec. 1972. *WR 146: 101*
[Nebr. Game & Parks Comm., Lincoln.] Pheasant and waterfowl nests on two nine-square mile study areas in south-central Nebraska were analyzed to determine if there were preferences for covertypes and plant associations involved in selection of nesting sites and productivity. Roadsides, wheat, and alfalfa were the covertypes preferred by pheasants as nesting cover. While pasture and hay and unused areas were used to a lesser degree for nesting, they provided important nesting cover. Fencerows were insignificant as pheasant nesting cover. Alfalfa, roadsides and pasture and hay were the covertypes preferred by waterfowl as nesting cover. All ducklings produced on the area were hatched in these covertypes. Both waterfowl and pheasants exhibited a preference for cool-season plant communities as nesting cover.--From summ.

Bureau of Sport Fisheries and Wildlife. [FOREIGN GAME LEAFLETS.] *U.S. Fish Wildl. Serv.* 4 p. 1971. Available from Supt. Documents, GPO, Washington, D.C., at 10¢ each. *WR 146: 101*
The following titles are available in the Foreign Game Leaflet series:
FGL-17 The Western Gray or Hungarian Partridge
FGL-18 The Kalij Pheasants
FGL-19 The Spotted Tinamous
FGL-20 The Red-winged Tinamous
FGL-21 The White-winged Pheasants
FGL-22 The Imperial or Black-bellied Sandgrouse
FGL-23 The Rock Partridges
FGL-24 The Chukar and Great Partridges
Earlier titles are listed in *WR 140: 148*.

Kays, Carl E. RED JUNGLEFOWL INTRODUCTIONS IN KENTUCKY / A FINAL REPORT. *Ky. Dep. Fish & Wildl. Resour., P.-R. Game Manage. Tech. Ser.* no. 18. iv + 16 p., 2 figs. 1972. *WR 146: 102*

Red junglefowl studies were conducted on pen-reared birds released on two study areas in western Kentucky during the period of August 1964 through April 1966. A total of 289 adult and juvenile birds was liberated during five release periods that ranged from late summer to early spring. Crowing cock counts were conducted on one study area in the spring with negative results. The greatest verified movement was about three miles with reports of movement up to five or more miles. From all indications no more than a remnant population remained on either study area when spring releases were made. Normal winter temperatures in western Kentucky appear to be below the limits of tolerance of red junglefowl. --From abstr.

Kobriger, Gerald D. RESULTS OF THE 1971 UPLAND GAME WING SURVEY. *N. Dak. Outdoors* 33(4): 18-21, 7 figs. June 1972. *WR 146: 102*

Sharp-tailed grouse, ruffed grouse, Hungarian partridge, sage grouse, and ringneck pheasant.

Nelson, Lee K. A FIVE-YEAR STUDY OF A BLACK FRANCOLIN INTRODUCTION IN KENTUCKY / A FINAL REPORT. *Ky. Dep. Fish & Wildl. Resour., P.-R. Game Manage. Tech. Ser.* no. 17. vi + 37 p., 14 figs. 1972. *WR 146: 102*

It was concluded that the black francolin was unsuited to Kentucky environmental conditions and was unable to adapt to them. It was therefore recommended that no future introductions of this species be made.--From abstr.

Ridpath, M. G. THE TASMANIAN NATIVE HEN, *TRIBONYX MORTIERII* / I. PATTERNS OF BEHAVIOUR. *CSIRO Wildl. Res.* 17(1): 1-51, 29 figs. Mar. 1972. *WR 146: 102*

[Div. Wildl. Res., CSIRO, P.O. Box 3121, Darwin, Australia.] Routine activities, voice, behavior to predators, agonistic behavior, sexual behavior, parental behavior, juvenile behavior, and methods of study are the major topics of discussion.

Ridpath, M. G. THE TASMANIAN NATIVE HEN, *TRIBONYX MORTIERII* / II. THE INDIVIDUAL, THE GROUP, AND THE POPULATION. *CSIRO Wildl. Res.* 17(1): 53-90, 6 figs. Mar. 1972. *WR 146: 102*

[Div. Wildl. Res., CSIRO, P.O. Box 3121, Darwin, Australia.] "This investigation mainly concerned interactions between individuals, and their effects, especially on the population."

Ridpath, M. G. THE TASMANIAN NATIVE HEN, *TRIBONYX MORTIERII* / III. ECOLOGY. *CSIRO Wildl. Res.* 17(1): 91-118, 3 figs. Mar. 1972. *WR 146: 102*

[Div. Wildl. Res., CSIRO, P.O. Box 3121, Darwin, Australia.] The relationships of this flightless moorhen with its biological and climatic environment are described, and the influences of environment and the bird's own behavior on population density are assessed.

Sands, James L. GAME BIRD HARVEST 1971. *N. Mex. Wildl.* 17(4): 11-13. July-Aug. 1972. *WR 146: 102*

Reports harvest of geese, sandhill cranes, doves, quail, pheasants, grouse, lesser prairie chickens, and band-tailed pigeons.

Wilson, Richard Howard. TIME AND MOTION STUDY OF AGONISTIC BEHAVIOR IN THE RED JUNGLE FOWL, *GALLUS GALLUS*. *Ph.D. thesis, Utah State Univ.* 58 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 102*

QUAIL

Akahori, Fumiaki, Masato Matsuura, and Ken Arai. [STUDIES ON THE MOVEMENT OF THE ALIMENTARY CANAL IN FOWLS: V. EFFECT OF STARVATION UPON THE MOVEMENT OF THE GIZZARD IN QUAILS.] *Bull. Azabu Vet. Coll.* 22. p. 15-24, illus. 1971. [From Biol. Abstr. 53(10), 1972. In Japanese with English summ.] *WR 146: 102*

Akahori, Fumiaki, Masato Matsuura, and Ken Arai. [STUDIES ON THE MOVEMENT OF THE ALIMENTARY CANAL IN FOWLS: VI. PHYSIOLOGICAL VALUES IN GROWING FEMALE CHICKS AND QUAILS.] *Bull. Azabu Vet. Coll.* 22. p. 25-39, illus. 1971. [From Biol. Abstr. 53(10), 1972. In Japanese with English summ.] *WR 146: 103*

Barkley, Robert Carl. FOODS OF SCALED QUAIL IN SOUTHEASTERN NEW MEXICO. *M.S. thesis, N. Mex. State Univ.* 1972. *WR 146: 103*
Seeds, green plant material, and animal material are the main categories of food of the scaled quail over its entire range, and more plant food is eaten than animal food. Seeds are eaten in larger amounts in winter, and green plant material is eaten in greater quantity in fall and winter. Animal material, nearly all insects, is eaten in largest amounts in summer.--From abstr.

Baxter, William L., and Carl W. Wolfe. THE INTERSPERSION INDEX AS A TECHNIQUE FOR EVALUATION OF BOBWHITE QUAIL HABITAT. *Nebr. Game & Parks Comm.* 12 p., 2 figs. Apr. 1972. *WR 146: 103*
An index based on the interspersion of vegetative types proved to be useful in evaluating quail habitat.--From concl.

Bayer, R. C., R. K. Ringer, and E. A. Cogger. THE INFLUENCE OF DIETARY VITAMIN A ON ATHEROGENESIS IN JAPANESE QUAIL. *Poultry Sci.* 51(3): 925-929, 4 figs. May 1972. *WR 146: 103*
[Mich. State Univ., East Lansing.]

Charles, O. W., D. A. Roland, and H. M. Edwards, Jr. THIAMINE DEFICIENCY IDENTIFICATION AND TREATMENT IN COMMERCIAL TURKEYS AND COTURNIX QUAIL. *Poultry Sci.* 51(2): 419-423, 1 fig. Mar. 1972. *WR 146: 103*
[Univ. Ga., Athens.]

Durairaj, G. THE EFFECT OF TEMPERATURE AND DIET ON THE FATTY ACID COMPOSITION OF JAPANESE QUAIL, *COTURNIX COTURNIX JAPONICA*. *Ph.D. thesis, Bowling Green State Univ.* 106 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 103*

Gardner, William M., and Kenneth B. Melvin. NOTE ON LONG-TERM HABITUATION OF FREEZING RESPONSES OF BOBWHITE QUAIL TO A HAWK. *Percept. Mot. Skills* 33(2): 555-558, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 103*
[Mercer Univ., Macon, Ga.] *"Colinus virginianus* and *Buteo swainsoni."*

Harshbarger, Thomas J., and James L. Buckner. QUAIL FOODS IN GEORGIA FLATWOODS. *Ga. For. Res. Pap.* 68. p. 1-5. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 103*
[SE Forest Exp. Sta., Lehigh Acres, Fla.] *"Colinus virginianus."*

Moorhead, P. D., and R. F. Cross. PROPHYLAXIS OF EXPERIMENTAL MONILIASIS IN QUAIL. A COMPARISON OF ETHYLENEDIAMINE DIHYDRIODIDE, BENLATE, SODIUM PROPIONATE, GENTIAN VIOLET, AND NYSTATIN. *Avian Dis.* 16(3): 649-655, 1 fig. May-June 1972. *WR 146: 103*
[Ohio Agric. Res. & Development Cent., Wooster, Ohio.]

Nirmalan, G. P., and G. A. Robinson. HEMATOLOGY OF JAPANESE QUAIL TREATED WITH EXOGENOUS STILBESTROL DIPROPIONATE AND TESTOSTERONE PROPIONATE. *Poultry Sci.* 51(3): 920-925. May 1972. *WR 146: 103*
[Univ. Guelph, Guelph, Ontario, Canada.]

Williams, James E., Douglas M. Watts, Orrey P. Young, and Thomas J. Reed. TRANSMISSION OF EASTERN (EEE) AND WESTERN (WEE) ENCEPHALITIS TO BOBWHITE SENTINELS IN RELATION TO DENSITY OF *CULISETA MELANURA* MOSQUITOES. *Mosquito News* 32 (2): 188-192, 2 figs. June 1972. *WR 146: 103*
[Walter Reed Army Inst. Res., Washington, D.C.]

Brun, R. ONTOGENESE- UND EVOLUTIONSPROBLEME BEI DER MUSTERBILDUNG DES ARGUSFASANS *(ARGUSIANUS ARGUS)*. [PROBLEMS OF ONTOGENESIS AND EVOLUTION IN THE FEATHER PATTERN FORMATION OF THE ARGUS PHEASANT *(ARGUSIANUS ARGUS).*] *Rev. Suisse Zool.* 78(1): 115-134, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German with English and French summ.] *WR 146: 104*
[Univ. Geneve, 154 route Malagnou, Chene-Bougeries, Switzerland.]

Gates, John Manley. THE ECOLOGY OF A WISCONSIN PHEASANT POPULATION. *Ph.D. thesis, Univ. Wis.* 938 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 104*
Investigation of a ring-necked pheasant *(Phasianus colchicus)* ecology in east-central Wisconsin in 1958-66. Predation was concluded to be the major factor holding the population below environmental capacity in terms of available habitat and social intolerances.

Norman, James C. POPULATION DYNAMICS AND HARVEST TRENDS OF PHEASANTS (EVALUATION OF PHEASANT SURVEYS). *Kans. For. Fish & Game Comm.* 50 p., 20 figs. 1971. *WR 146: 104*
It is recommended that all pheasant surveys except the July and October counts and the small game harvest survey be discontinued as unessential.

Pils, Charles. WHAT HAPPENS TO PHEASANT NESTS? *Wis. Conserv. Bull.* 37(4): 7, illus. July-Aug. 1972. *WR 146: 104*
[Bur. Res., Madison, Wis.] "Radio-tracking hen pheasants has verified the importance of good nesting cover. So far nearly all nest predation at Waterloo [Wildlife Area] has been by mammals, notably including skunks and dogs."

Seibert, Henri C. ANNUAL ENERGY BUDGET OF THE REEVES PHEASANT. *Ohio Fish & Wildl. Rep.* 3. p. 1-10, 2 figs. Apr. 1972. *WR 146: 104*
[Ohio Univ., Athens.] Abstract: The average energy requirement for the Reeves pheasant *(Syrmaticus reevesii)* in outdoor environments with a climate similar to that of the Athens, Ohio area was calculated from experimental data. A male Reeves requires 76,600 kcal and a female 54,100 kcal of metabolizable energy per year for non-strenuous maintenance (= about 57,000 kcal/kgm of body weight). The gross energy requirement is 100,500 kcal for males and 72,100 kcal for females per year (= 75,000 kcal/kgm). Productive energy averages about 30,000 kcal/kgm per year. Most semi-strenuous activity (walking or pacing) occurs only during a brief period of the day; activity peaks tend to be bimodal on long days and unimodal on short days. Calculations of the yearly partitioning of metabolizable energy are presented for basal metabolism, non-strenuous activity, egg laying, and molt.

Shields, James T., and H. Kenneth Neudahl. PHEASANT RELEASE PROGRAM OF THE MINNESOTA FUTURE FARMERS OF AMERICA 1965-1969. *Minn. Dep. Educ.* ii + 22 p., 1 fig. June 1970. *WR 146: 104*
[Centennial Bldg., St. Paul, Minn.] An analysis of the program in which 84,505 pheasants were successfully raised and released during 1965-1969.

Wagner, Frederic H., C. D. Besadny, and Cyril Kabat. POPULATION ECOLOGY AND MANAGEMENT OF WISCONSIN PHEASANTS. *Wis. Conserv. Dep. Tech. Bull.* no. 34. 168 p., 70 figs. 1965. *WR 146: 104*
[Utah State Univ., Logan.] Synthesis of pheasant *(Phasianus colchicus)* population survey data accrued from 1946 to 1961. Possible mechanisms and causes of: short-term fluctuations, population balance, and determination of long-term mean density in any given area are suggested. Management implications are also discussed.

Arthaud, Fred L. LAND USE AND PRAIRIE CHICKEN POPULATIONS IN SOUTHWESTERN MISSOURI. *Trans. Kans. Acad. Sci.* 73(2): 267-276, 2 figs. 1970. *WR 146: 105*
[Trenton Sr. High School, Trenton, Mo.] Prairie chicken populations fluctuated from a low of 44 (both sexes) in 1949 to a high of 314 (males only) in 1967 on 16.5 square miles of prairie chicken range in St. Clair County, Missouri. The largest population increases occurred when the number of booming cocks rose from 80 in 1963 to 314 in 1967. These population increases were believed to have occurred in response to a combination of increased grassland and improved management of a 1,360-acre tract of native grassland.--From abstr.

Boag, D. A. EFFECT OF RADIO PACKAGES ON BEHAVIOR OF CAPTIVE RED GROUSE. *J. Wildl. Manage.* 36(2): 511-518, 3 figs. Apr. 1972. *WR 146: 105*
[Nature Conservancy, Mountain & Moorland Res. Sta., Banchory, Scotland.] Abstract: The effect of radio packages on activity, food intake, and use of different habitat types was investigated in penned immature red grouse *(Lagopus l. scoticus)*. Levels of activity among radio-equipped grouse were consistently lower than among controls. Food consumption among experimental females was significantly less than among their respective controls, but such was not true among males. Use of different habitats was similar in both groups of grouse. The differences in levels of activity and food intake between the radio-equipped and control groups were most marked in the first week after fitting with transmitters.

Braun, Clait E. HABITAT REQUIREMENTS OF COLORADO WHITE-TAILED PTARMIGAN. *Proc. Western Assoc. State Game & Fish Comm.* 51. 9-p. reprint, 1 fig. 1971. *WR 146: 105*
[Colo. Div. Game, Fish & Parks, Denver.] *"Lagopus* spp."

Braun, Clait E., and Glenn E. Rogers. THE WHITE-TAILED PTARMIGAN IN COLORADO. *Colo. Div. Game Fish & Parks Tech. Publ.* no. 27. viii + 80 p., 33 figs. July 1971. Price $1.00. *WR 146: 105*
Following sections on literature review, methods and description of study areas, the major topics of discussion are: distribution, age determination, sex determination, breeding densities, nesting, nesting success, production, fall densities, natural mortality, and hunting mortality of *Lagopus leucurus*.

Martinka, Robert R. STRUCTURAL CHARACTERISTICS OF BLUE GROUSE TERRITORIES IN SOUTHWESTERN MONTANA. *J. Wildl. Manage.* 36(2): 498-510, 5 figs. Apr. 1972. *WR 146: 105*
[Mont. Fish & Game Dep., White Sulphur Springs.] Structural characteristics of male blue grouse *(Dendragapus obscurus pallidus)* territories and their relationship to land-use practices and forest succession were studied from 1967 to 1969 on a 700-acre area of the Sapphire Mountains in southwestern Montana. During 130 observation trips, 1,010 sightings of males on 40 territories were made. About 60% of the males were leg-banded for individual identification. Use of territory is discussed including territory size and vegetational composition, length of occupation, and breeding habitat.--From abstr.

Moss, Robert. FOOD SELECTION BY RED GROUSE *(LAGOPUS LAGOPUS SCOTICUS* (LATH.)) IN RELATION TO CHEMICAL COMPOSITION. *J. Anim. Ecol.* 41(2): 411-428, 9 figs. June 1972. *WR 146: 105*
[Nature Conservancy, Blackhall, Banchory, Kincardineshire, Scotland.] Summary: The selection of food by red grouse was examined in order to establish chemical criteria for measuring food quality in spring. The birds were shot at or just before dusk. Over 90% of their diet in spring was heather; *Erica tetralix* followed by *E. cinerea* formed most of the remaining 10%. Selection for N and P increased from winter to spring and continued to increase throughout spring until the birds had laid their eggs. Selection for Ca, soluble carbohydrates and crude fat did not increase from winter to spring; if anything it decreased. The present results confirm an earlier conclusion that N and P are probably the most important nutrients in the spring and may be used as measures

of the birds' plane of nutrition in further studies. They also confirm that metabolizable energy is not likely to be limiting at this time of year. The hypothesis that red grouse selected for N and P solely by regulating the size and type (woody or leafy) of particles eaten was tested and rejected. The *Erica* spp. contained less N and P than the heather. They began to grow earlier than heather and perhaps some unidentified factor in their new growth was important to the grouse. It was predicted that the levels of N and/or P in the laying hens' diet should be related to subsequent breeding success.

Moss, Robert. SOCIAL ORGANIZATION OF WILLOW PTARMIGAN ON THEIR BREEDING GROUNDS IN INTERIOR ALASKA. *Condor* 74(2): 144-151, 1 fig. Summer 1972. *WR 146: 106*

[Nature Conservancy, Blackhall, Banchory, Kincardineshire, Scotland.] A creek valley was occupied by willow ptarmigans *(Lagopus lagopus)* before the adjacent hillside, the birds presumably being forced from the valley by territorial competition. *Salix alaxensis* was the preferred food, and it grew only in the valley. A few non-territorial cocks and possibly one unmated hen were present. Rock ptarmigans *(L. mutus)* and willow ptarmigans occupied territories on the same ground. Willow ptarmigans were dominant over rock ptarmigans when interactions occurred.--Courtesy/ Paul A. Stewart.

Trobec, Roger J., and Lewis W. Oring. EFFECTS OF TESTOSTERONE PROPIONATE IMPLANTATION ON LEK BEHAVIOR OF SHARP-TAILED GROUSE. *Am. Midl. Nat.* 87(2): 531-536. Apr. 1972. *WR 146: 106*

[Univ. N. Dak., Grand Forks.] Abstract: Territorial alignments during the reproductive period were little altered by intramuscular implantation of 30 mg of testosterone propionate. Implanted subdominant males showed considerable increase in overt aggression during the period 4-8 days after treatment but showed little or no increase in highly ritualized aggression. Displays associated primarily with reproduction were seemingly unaffected by implantation, except that late in the season unimplanted birds ceased to visit the ground whereas implanted ones continued to come until about 40 days after treatment.

Watson, Adam. THE BEHAVIOUR OF THE PTARMIGAN. (CONCLUSION). *British Birds* 65(3): 93-117, 10 figs. Mar. 1972. *WR 146: 106*

[Nature Conservancy, Blackhall, Banchory, Kincardineshire, Scotland.] The following types of behavior are discussed: voice and associated behavior of adults, voice and associated behavior of chicks, sexual behavior, displacement activities, and agonistic behavior.

Zwickel, Fred C. SOME EFFECTS OF GRAZING ON BLUE GROUSE DURING SUMMER. *J. Wildl. Manage.* 36(2): 631-634. Apr. 1972. *WR 146: 106*

[Univ. Alberta, Edmonton, Alberta, Canada.] Abstract: Blue grouse *(Dendragapus obscurus pallidus)* were studied on heavily grazed and ungrazed areas in the Methow Valley, Washington. Mean size of broods and an index of density, based on birds observed per hour, did not vary significantly between these two types of habitat. Courtship activity of males, as measured by audio counts, varied between types, and there was some indication that the proportion of successful breeding hens may have been highest on ungrazed areas.

TURKEY

Eve, J. Hammond, Forest E. Kellogg, and B. Wayne Bailey. BLOOD PARASITES IN WILD TURKEYS OF EASTERN WEST VIRGINIA. *J. Wildl. Manage.* 36(2): 624-627. Apr. 1972. *WR 146: 106*

[Univ. Ga., Athens.] Abstract: Peripheral blood films from 76 wild turkeys *(Meleagris gallopavo)* from eastern West Virginia were examined for parasites. *Leucocytozoon smithi* was found in 100% of the films from adults and 77% of those from immature birds. *Haemoproteus meleagridis* was present in 53% of the adults

and 47% of the immatures. A single trypanosome organism was found in the blood of one adult bird. No plasmodia or microfilariae were observed. Wild turkey populations increased markedly during the study period, but the turkey's high biotic potential could result in such increases despite substantial losses.

Lobdell, Charles H., Kenneth E. Case, and Henry S. Mosby. EVALUATION OF HARVEST STRATEGIES FOR A SIMULATED WILD TURKEY POPULATION. *J. Wildl. Manage.* 36(2): 493-497, 4 figs. Apr. 1972. *WR 146: 107*
[Va. Polytech. Inst., Blacksburg.] When the reproductive attainment is adequate to ensure a self-sustaining population, liberalized spring hunting of gobblers is biologically innocuous, regardless of the short-term upward or downward trends of the population.--From abstr.

Scott, Virgil E., and Erwin L. Boeker. AN EVALUATION OF WILD TURKEY CALL COUNTS IN ARIZONA. *J. Wildl. Manage.* 36(2): 628-630. Apr. 1972. *WR 146: 107*
[Denver Wildl. Res. Cent., Tempe, Ariz.] Abstract: Gobbler call counts were conducted on the Fort Apache Indian Reservation from 1966 through 1971 as part of an intensive study of Merriam's wild turkey *(Meleagris gallopavo merriami)*. Sex ratios resulting from visual counts were compared with call counts to determine if the call counts could be used as a population index. The sex ratio varied from 2.1 to 3.8 hens per adult gobbler during the 6-year period. The number of calls per gobbler showed a moderate correlation with the sex ratio *(r = 0.855)* and a stronger correlation when only the two highest surveys per year were considered *(r = 0.965)*. This correlation suggests that gobbling activity is associated with the sex ratio and might be useful as population indexes where outside disturbances do not interfere.

DOVES & PIGEONS

Alexander, Judith R., and William T. Keeton. THE EFFECT OF DIRECTIONAL TRAINING ON INITIAL ORIENTATION IN PIGEONS. *Auk* 89(2): 280-298, 5 figs. Apr. 1972. *WR 146: 107*
[Cornell Univ., Ithaca, N.Y.] In exhaustive experiments, no evidence of direction-training effect was found.--Courtesy/ Paul A. Stewart.

Bettmann, Helmut. ZUR VERMEHRUNG DER RINGELTAUBE *(COLUMBA PALUMBUS)*. [ON THE INCREASE OF THE WOOD-PIGEON *(COLUMBA PALUMBUS)*.] *Ornithol. Mitt.* 23(9): 169-170. Sept. 1971. In German. *WR 146: 107*
[Pestalozzistrasse 6, Rheydt, Germany.

Carpenter, James W., Richard E. Corstvet, John P. Thilsted, James C. Lewis, and John A. Morrison. A BACTERIOLOGIC SURVEY OF THE RESPIRATORY TRACT OF MOURNING DOVES IN OKLAHOMA AND A SEROLOGIC SURVEY OF THOSE DOVES FOR ANTIBODIES TO CERTAIN PATHOGENS. *Avian Dis.* 16(3): 671-679. May-June 1972. *WR 146: 107*
[Okla. Coop. Wildl. Res. Unit, Stillwater.]

Cook, Alfred Daniel. DOVE WEED SEEDS: VARIATIONS IN FORM AND DEFENSES AGAINST AVIAN PREDATION. *Ph.D. thesis, Univ. Calif.* (Irvine). 38 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 107*
Although a mottled, striped or black seed predominates on each plant, all senescent plants produce gray seeds which have a distinct set of structural, chemical and germination characteristics. Gray seeds are chemically protected from predation by mourning doves by the possession of an unpalatable chemical in their seed coats. The doves initially reject gray seeds by taste but later learn to recognize their uniform gray warning coloration and reject them by sight.

Gates, Charles E., and William B. Smith. ESTIMATION OF DENSITY OF MOURNING DOVES FROM AURAL INFORMATION. *Biometrics* 28(2): 345-359. June 1972. In English with French summ. *WR 146: 107*
[Tex. A&M Univ., College Station.] Summary: Several estimators are derived by maximum likelihood for estimating absolute as opposed to relative population

densities of mourning doves by sampling numbers of calls per time interval, as well as the number of calling birds. The advantages and disadvantages of the use of aural information in the estimation of wildlife population densities ('aural estimation') are discussed. One of the major limitations of the basic procedures is that the calling rate of mourning doves varies with time, even over sampling periods as short as one hour. This limitation is removed by examining a time-dependent model wherein the mean number of doves heard at time t is any integrable function; i.e. we assume a nonhomogeneous Poisson process. Although the problem is developed from the perspective of mourning doves, the general approach probably applies for other species as well. Simulation is employed to find the correction necessary to yield nearly unbiased estimators and to demonstrate the validity of the time-dependent process. A numerical example using data from Wilson County, Texas, is provided.

Heer, Erwin. NOTIZEN ZUR FORTPFLANZUNGSBIOLOGIE DER TUERKENTAUBE. [THE REPRODUCTION BIOLOGY OF THE TURTLE DOVE.] *Jahresh. Ges. Naturkd. Wuerttemb.* 125: 276-278, illus. 1970. [From Biol. Abstr. 53(10), 1972. In German.] *WR 146: 108*
[Bopfingeu, Germany.]

Klei, Thomas Ray. STUDIES ON *HAEMOPROTEUS COLUMBAE* OF THE PIGEON, *COLUMBA LIVIA*, AND THE INTERMEDIATE HOST *PSEUDOLYNCHIA CANARIENSIS*. *Ph.D. thesis, Wayne State Univ.* 183 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 108*

Kocan, Richard M., and Spencer R. Amend. IMMUNOLOGIC STATUS OF MOURNING DOVES FOLLOWING AN EPIZOOTIC OF TRICHOMONIASIS. *J. Wildl. Dis.* 8(2): 176-180. Apr. 1972. *WR 146: 108*
[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: An epizootic of trichomoniasis in mourning doves at the Carolina Sandhills National Wildlife Refuge began in 1969 and continued into 1970. The disease was seen in 16% of the adults and 2% of the immatures in 1970, but only one immature bird out of 37 surveyed (3%) carried *Trichomonas gallinae*. Challenge infection of 33 doves from the epizootic area showed 85% to be resistant to trichomoniasis, compared to 69% resistance in doves from Maryland, where no epizootic has occurred for at least 3 years. Plasma protein changes which occurred following challenge infection were identical in CSNWR and Maryland doves which showed evidence of disease. Of the doves which showed no signs of disease, those from the CSNWR exhibited no change in beta globulins, identical to the response in pigeons which survive an infection by *T. gallinae*, but they had some tissue invasion by the parasite.

Ljunggren, Lars. LIVER DISEASES AND PIGEON POX IN SOUTH SWEDISH WOOD PIGEON *COLUMBA P. PALUMBUS* POPULATIONS. *Ornis Scand.* 2(1): 5-11, 1 fig. 1971. *WR 146: 108*
[Univ. Lund, Lund, Sweden.] Abstract: In all, 1305 urban and rural Wood Pigeons, collected in the years 1961 to 1967, were studied. Fatty liver corresponding to a frequency of about 10% was recorded in Wood Pigeons shot in late spring. A disease of the liver, probably tuberculosis, was more frequent in the urban population than in the rural one (5.6 and 3.9% respectively). Apart from the lesions, the infection was accompanied by a clear enlargement of the liver, especially in the female. Pigeon pox was found to occur in varying degree every year among Wood Pigeons in south-western Scania. This disease was entirely restricted to young individuals, appeared only in autumn, and was more frequent in the urban than in the rural population.

Markus, Miles B., and J. H. Oosthuizen. PATHOGENICITY OF *HAEMOPROTEUS COLUMBAE*. *Trans. Roy. Soc. Trop. Med. Hyg.* 66(1): 186-187. 1972. *WR 146: 108*
[Imperial Coll., Univ. London, London, England.] *Haemoproteus columbae* can produce clinical signs of disease in domestic pigeons *Columba livia*.

McLean, Robert G. ACCEPTANCE OF APHOLATE-TREATED BAIT BY PIGEONS. *Am. Midl. Nat.* 87(2): 527-530. Apr. 1972. *WR 146: 109*
[U.S. Public Health Serv. & Mental Health Admin., P.O. Box 363, Lawrenceville, Ga.]

Rojas F., J. E., and L. F. Rosales. *DISPHARYNX SPIRALIS* EN PALOMAS *(COLUMBA LIVIA DOMESTICA)* DE GUATEMALA. [*DISPHARYNX SPIRALIS* IN PIGEONS *(COLUMBA LIVIA DOMESTICA)* OF GUATEMALA.] *Rev. Fac. Med. Vet. Zootec. Univ. San Carlos* 3(1): 81-86, illus. 1971. [From Biol. Abstr. 53(3), 1972. In Spanish with English summ.] *WR 146: 109*
[Univ. San Carlos, San Carlos, Guatemala.]

Siegfried, W. R. MOULT OF THE PRIMARY REMIGES IN THREE SPECIES OF *STREPTOPELIA* DOVES. *Ostrich* 42(3): 161-165. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 109*
[Univ. Cape Town, Cape Town, South Africa.] Some observations are given on the molt of the primary remiges in *Streptopelia semitorquata, S. capicola* and *S. senegalensis* in Stellenbosch, South Africa.

Slade, N. A., and J. B. Low. FACTORS AFFECTING THE CENSUSING OF MOURNING DOVES. *Proc. Utah Acad. Sci. Arts Lett.* 47(1): 192-196. 1970. [From Biol. Abstr. 53(7), 1972.] *WR 146: 109*
[Utah State Univ., Logan.] *"Zenaidura macroura marginella."*

Sturtevant, Joan. EVALUATION OF ENVIRONMENTAL HAZARDS FOLLOWING THE USE OF SYNTHETIC GRIT CONTAINING MESTRANOL FOR PIGEON CONTROL. *Toxicol. Appl. Pharmacol.* 19(4): 649-659. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 109*
[10 Brewster Ave., Easthampton, Mass.] Mestranol in the form used for pigeon population control has no effect on representative organisms of components of the pigeons' feeding habitat.

Tarboton, W. R., and C. J. Vernon. NOTES ON THE BREEDING OF THE GREEN PIGEON *TRERON AUSTRALIS*. *Ostrich* 42(3): 190-192. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 109*
[75 Major Rd., Olifantsfrontein, Transvaal, South Africa.] Nesting area and sites, nest construction, egg numbers, nestling characteristics and behavior of adults were studied.

Wallraff, Hans G. KURZZEITIGE SCHWANKUNGEN BEI DER RICHTUNGSWAHL ABFLIEGENDER BRIEFTAUBEN. [SHORT-TERM FLUCTUATIONS IN THE DIRECTIONAL CHOICES OF PIGEONS AT DEPARTURE.] *J. Ornithol.* 112(4): 396-410, illus. 1971. [From Biol. Abstr. 53 (12), 1972. In German with English summ.] *WR 146: 109*
[Max-Planck-Inst. Verhaltensphysiol., Seewiesen, Germany.]

WATERFOWL

Baker, James Leonard. WOOD DUCK *(AIX SPONSA)* PRODUCTION FROM NEST BOXES AND BROOD STUDIES ON THE NOXUBEE NATIONAL WILDLIFE REFUGE. *Ph.D. thesis, Miss. State Univ.* 55 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 109*

Batt, Bruce D. J. GADWALL DUCK LEARNS TO FLY AFTER BREAKING A WING. *Bird-Banding* 42(4): 301-302, 1 fig. Oct. 1971. *WR 146: 109*
[Delta Waterfowl Res. Sta., Delta, Manitoba, Canada.] The crippled gadwall *(Anas strepera)* was kept in captivity.--Courtesy/ Paul A. Stewart.

Bauer, Willy. HESSISCHE GEWÄSSER ALS DURCHZUGS- UND WINTERRASTAREALE FÜR SCHWIMMVÖGEL. [HESSIAN WETLANDS AS PASSAGE AND WINTERING AREAS FOR WATERFOWL.] *Luscinia* 41(2): 63-75, 1 fig. Dec. 1970. In German with English summ.
WR 146: 109
[Schneckenhofstrasse 35, Frankfurt/M., Germany.]

Benson, Denis A. SPECIES OF WATERFOWL TAKEN IN CANADA DURING THE 1968-69 HUNTING SEASON. *Canadian Wildl. Serv. Prog. Notes* no. 12. 14 p. Mar. 1970. In English and French. *WR 146: 110*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Analysis of data collected on 21 spp. of ducks (other than sea ducks) taken by hunters during 1968-69.

Benson, Denis A. REPORT ON SALES OF THE CANADA MIGRATORY GAME BIRD HUNTING PERMIT AND WATERFOWL HARVEST AND HUNTER ACTIVITY, 1970. *Canadian Wildl. Serv. Prog. Notes* no. 22. 29 p. Aug. 1971. In English and French. *WR 146: 110*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.]

Bezzel, Einhard, and Eberhard Von Krosigk. ZUM ABLAUF DES BRUTGESCHAEFTES BEI ENTEN. [ON THE COURSE OF BREEDING ACTIVITY IN DUCKS.] *J. Ornithol.* 112(4): 411-437, illus. 1971. [From Biol. Abstr. 53(11), 1972. In German with English summ.] *WR 146: 110*

[Gateigst. 43, Garmisch-Partenkirchen, Germany.] *"Anas platyrhynchos, A. strepera, Aythya ferina,* and *A. fuligula."*

Cooch, F. G., and G. W. Kaiser. SPECIES OF WATERFOWL AND AGE AND SEX RATIOS OF DUCKS HARVESTED IN CANADA DURING THE 1970 SEASON. *Canadian Wildl. Serv. Prog. Notes* no. 25. 52 p. Mar. 1972. In English and French. *WR 146: 110*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.]

Doty, Harold A. HATCHABILITY TESTS WITH EGGS FROM CAPTIVE WOOD DUCKS. *Poultry Sci.* 51(3): 849-853. May 1972. *WR 146: 110*

[Northern Prairie Wildl. Res. Cent., Jamestown, N. Dak.] Abstract: The effect of diet and artificial incubation on fertility and hatchability of wood duck *(Aix sponsa)* eggs and survival of young was measured. Hatchability of eggs from hens fed a diet containing 37% protein was increased significantly ($P < 0.05$) over that of hens fed a diet containing 17% protein. Hatchability was also significantly ($P < 0.005$) greater for eggs incubated 10 days under hens before being placed in an incubator than for eggs placed in an incubator for the entire period. Ducklings that hatched from naturally started incubation survived at a much higher rate ($P < 0.001$). Egg fertility was not affected by the diets.

Doty, Harold A., and Arnold D. Kruse. TECHNIQUES FOR ESTABLISHING LOCAL BREEDING POPULATIONS OF WOOD DUCKS. *J. Wildl. Manage.* 36(2): 428-435, 1 fig. Apr. 1972. *WR 146: 110*

[Northern Prairie Wildl. Res. Cent., Jamestown, N. Dak.] Discussion: Two and one-half years have elapsed since hand-reared wood ducks [*Aix sponsa*] were released at Arrowwood Refuge. The ducks migrated and were taken by hunters in similar proportion to naturally occurring wood duck populations. A reasonably high rate of homing by released females and a probable higher rate of homing by their female progeny doubled the nesting population on the refuge during the second year. We conclude that the addition of wood ducks and nest houses in this area led to the establishment of the species as a breeding resident in a heretofore unoccupied habitat.

Erskine, A. J. POPULATIONS, MOVEMENTS AND SEASONAL DISTRIBUTION OF MERGANSERS IN NORTHERN CAPE BRETON ISLAND. *Canadian Wildl. Serv. Rep. Ser.* no. 17. 36 p., 12 figs. 1972. In English with French summ. Price $1.00. *WR 146: 110*

Description of the seasonal fluctuations and movements of merganser (chiefly common merganser) populations in northern Cape Breton Island, Nova Scotia; the impact of systematic, year-round shooting on these populations and their movements; and other factors influencing the occurrence of mergansers in this and adjacent areas

Erskine, Anthony J. POSTBREEDING ASSEMBLIES OF RING-NECKED DUCKS IN EASTERN NOVA SCOTIA. *Auk* 89(2): 449-450. Apr. 1972. *WR 146: 110*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Small flocks of ring-necked ducks *(Aythya collaris)* found in late July and early August were thought to be locally breeding birds.--Courtesy/ Paul A. Stewart.

Fog, Jørgen. OM ANDEFUGLE CONTRA ELLEDNINGER. [ON THE REACTIONS OF DUCKS AND GEESE TO HIGH VOLTAGE LINES.] *Flora Fauna* 76(4): 141-144, 1 fig. 1970. In Danish with English summ. *WR 146: 111*
[Vildtbiol. Sta., Kalø, Denmark.]

Geis, Aelred D., and F. Graham Cooch. DISTRIBUTION OF THE DUCK HARVEST IN CANADA AND THE UNITED STATES. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 151. iv + 11 p. Feb. 1972. For sale by Supt. Documents, GPO, Washington, D.C., at 25¢. *WR 146: 111*
[Migratory Bird Populations Sta., Laurel, Md.] Abstract: Marked differences are noted in the distribution of harvest of various duck species between and within Canada and the United States, on the basis of data obtained from mail questionnaire and wing collection surveys.

Gilmer, David Seeley. HOME RANGE, AND HABITAT USE OF BREEDING MALLARDS *(ANAS PLATYRHYNCHOS)* AND WOOD DUCKS *(AIX SPONSA)* IN NORTH-CENTRAL MINNESOTA AS DETERMINED BY RADIO TRACKING. *Ph.D. thesis, Univ. Minn.* 164 p. 1971. [From Diss. Abstr. Int. B. Sci. Eng. 32(11), 1972.] *WR 146: 111*
Thirty mallards and 47 wood ducks were studied during the breeding seasons of 1968-70 in a 17-square-mile study area in the Chippewa National Forest with the use of a radio-tracking system.

Gorman, Martin L., and Henry Milne. CRECHE BEHAVIOUR IN THE COMMON EIDER *SOMATERIA M. MOLLISSIMA* L. *Ornis Scand.* 3(1): 21-26, 1 fig. 1972. *WR 146: 111*
[Univ. Aberdeen, Newburgh, Aberdeenshire, Scotland.] Creche behavior by the young of the common eider is described at the breeding colony on the Sands of Forvie, Scotland. Individually marked breeding females and marked broods were used to determine the association which occurred within creches. Females attending creches had completed incubation and remained, on average, only four days with the young. Creching probably evolved in eiders where the parent females have to leave their young in order to feed and recover body weight lost during incubation. The role of the 'guard-females' in this situation appears mainly to be that of detecting aerial predators such as gulls or crows.--From abstr.

Heusmann, H. W. SURVIVAL OF WOOD DUCK BROODS FROM DUMP NESTS. *J. Wildl. Manage.* 36(2): 620-624, 2 figs. Apr. 1972. *WR 146: 111*
[Mass. Div. Fisheries & Game, Westboro.] Abstract: Recapture rates of web-tagged wood ducks *(Aix sponsa)* hatched on the Great Meadows National Wildlife Refuge in Concord, Massachusetts, were 26.3 and 26.5% for ducklings hatched in dump nests during the periods 1952-54 and 1964-66. During these same periods, recapture rates of ducklings hatched in normal nests were 27.7 and 24.3%.

Hochbaum, George S., and Eugene F. Bossenmaier. RESPONSE OF PINTAILS TO IMPROVED BREEDING HABITAT IN SOUTHERN MANITOBA. *Canadian Field Nat.* 86(1): 79-81. Jan.-Mar. 1972. *WR 146: 111*
[Manitoba Dep. Mines, Resour. & Environ. Mgmt., Winnipeg, Manitoba, Canada.] Abstract: Migrant pintails responded to ideal nesting habitat in 1969 at St. Andrews Bog north of Winnipeg, Manitoba, by remaining to nest in unusually large numbers. Success of the initial nesting attempt and subsequent brood survival were excellent. Key factors in the phenomenon were the reservoir of migrant pintails; the large acreage of new nesting habitat; favourable weather starting in early April with no subsequent setbacks; virtual absence of nest losses; and sufficient rainfall through mid-July to maintain brood habitat. The elastic response of pintails to their surroundings suggests that *extensive* programs of environmental protection across the species' vast breeding range must be considered in their future management.

Hopper, Richard M. WATERFOWL USE IN RELATION TO SIZE AND COST OF POTHOLES. *J. Wildl. Manage.* 36(2): 459-468. Apr. 1972. *WR 146: 111*
[Colo. Div. Game, Fish & Parks, Fort Collins.] Relationships among waterfowl use, size, and cost of 84 potholes blasted in eastern Colorado were studied from 1968 to 1970. Twenty-one potholes were created by each of four sizes of charges:

single charges of 25 to 50 pounds each and multiple charges of 75 (three 25-lb charges) and 150 pounds (three 50-lb charges) each. The 75-lb charge was the most efficient in regard to cost per duck visit and number of duck visits per 100 ft^2 of surface area, followed by the 150-lb size. Both 75- and 150-lb charges are recommended over the 25- or 50-lb charges for use in blasting potholes.--From abstr.

Irwin, James C., and Lars H. Karstad. THE TOXICITY FOR DUCKS OF DISINTEGRATED LEAD SHOT IN A SIMULATED-MARSH ENVIRONMENT. *J. Wildl. Dis.* 8(2): 149-154. Apr. 1972. *WR 146: 112*

[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: Adult mallard drakes were exposed for approximately 14 weeks to distributions of 17.8, 89.0, and 178 g of particulate lead per m^2 in simulated-marsh areas. The ante-mortem and post-mortem findings indicated that exposures of 17.8 g of particulate lead per m^2 had a low toxicity for the experimental birds. The birds exposed to 89.0 g/m^2 experienced a 57% mortality within an average of 72.5 days; all had positive fluorescent erythrocyte tests; and post-mortem examinations showed evidence of chronic lead toxicosis. The birds exposed to 178 g/m^2 showed overt signs of lead poisoning; they experienced 100% mortality within an average of 22.5 days; and post-mortem examinations showed evidence of subacute lead toxicosis. It was concluded that distributions of disintegrated lead shot (i.e. particulate lead) in waterfowl wetlands could probably exceed existing distributions of commercial lead shot in heavily hunted areas by ten fold without presenting a significant toxicity to waterfowl.

Jõgi, Ahto. ZUM MAUSERZUG DER SCHELLENTE *(BUCEPHALA CLANGULA)* UND TRAUERENTE *(MELANITTA NIGRA)* IN DER ESTNISCHEN SSR. [ON THE PRE-MOLT FLIGHT OF THE GOLDENEYE *(BUCEPHALA CLANGULA)* AND THE COMMON SCOTER *(MELANITTA NIGRA)* IN THE ESTONIAN SSR.] *Ornithol. Mitt.* 23(4): 65-67, 1 fig. Apr. 1971. In German. *WR 146: 112*

[Inst. Zool., Tartu, Estonian SSR.]

Kocan, Richard M. SOME PHYSIOLOGIC BLOOD VALUES OF WILD DIVING DUCKS. *J. Wildl. Dis.* 8(2): 115-118. Apr. 1972. *WR 146: 112*

[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: Blood samples were obtained from 54 canvasbacks *(Aythya valisineria)*, 30 lesser scaup *(A. affinis)*, 3 ring-necks *(A. collaris)*, and 3 buffleheads *(Bucephala albeola)*, which were wintering on Chesapeake Bay. These blood samples were used for: red blood cell counts (cans. 2.56 x $10^6/mm^3$; scaup 2.45 x $10^6/mm^3$; ring-necks 2.50 x $10^6/mm^3$; bufflehead 2.64 x $10^6/mm^3$), packed cell volume (cans. 52.2%; scaup 57.1%; ring-neck 49.1%; buffleheads 54.3%), total protein (cans. 4.4 g/100 ml; scaup 4.4 g/100 ml; ring-neck 3.5 g/100 ml; bufflehead 3.8 g/100 ml), erythrocyte measurements, and electrophoretic analysis of plasma and serum. Variations between individuals of the same species and sex were slight but a possible difference between male and female erythrocyte numbers and packed cell volumes was evident in the canvasback and scaup samples.

Kuroda, N. M. [DISTRIBUTION OF THE ANSERINE BIRDS FOUND IN THE JAPANESE ISLANDS. Part III and Part IV.] *Tori Bull. Ornithol. Soc. Japan* 19: 93-125. 1969. [From Auk 88(4), 1971. In Japanese with English summ.] *WR 146: 112*

Kuroda, Nagamichi. [RARE HYBRID DUCKS.] *Tori Bull. Ornithol. Soc. Japan* 20 (88): 62-64, illus. 1970. [From Biol. Abstr. 53(4), 1972. In Japanese with English summ.] *WR 146: 112*

"Anas crecca X *A. acuta."*

Lavery, H. J. STUDIES OF WATERFOWL (ANATIDAE) IN NORTH QUEENSLAND: IV. MOVEMENTS. *Queensland J. Agric. Anim. Sci.* 27(4): 411-424, illus. 1971. [From Biol. Abstr. 53(5), 1971.] *WR 146: 112*

[Queensland Dep. Primary Ind., Ooncoonba, Queensland, Australia.] Movement patterns of the 15 spp. of waterfowl occurring in north Queensland during 1959-1963 were determined from population fluctuations observed by regular counting, particularly in the Bohle River and Ross River basins, from band recoveries,

and from more general widespread observations. Species of the coastal plains, mainly magpie goose *(Anseranas semipalmata)*, grass whistling-duck *(Dendrocygna eytoni)*, water whistling-duck *(D. arcuata australis* Reichenbach), black duck *(Anas superciliosa rogersi)* and Australian pygmy goose *(Nettapus coromandelianus albipennis)*, moved annually from shallow-water to deep-water habitat, often nearby. Species of the inland, as examples grey teal *(Anas gibberifrons gracilis)*, white-eyed duck *(Aythya australis)*, maned wood duck *(Chenonetta jubata)* and other black ducks, also moved, as evaporation proceeded, from shallow-waters to more permanent habitat mostly distributed on the distant coastal plains. The seasonal and permanent habitat types used were characteristically distributed for each of these species. Under the regular seasonal climatic conditions in north Queensland, movements between the types also were regular. Proximate factors that initiated the movements are as yet undefined. Vagrant birds (e.g. populations of black duck) invaded north Queensland from time to time; these flocks were readily distinguished by large size, irregular occurrence and use of mostly different habitat.

Lavery, H. J. STUDIES OF WATERFOWL (ANATIDAE) IN NORTH QUEENSLAND: V. BREEDING. *Queensland J. Agric. Anim. Sci.* 27(4): 425-436, illus. 1971. [From Biol. Abstr. 53(5), 1972.] *WR 146: 113*

[Queensland Dep. Primary Ind., Ooncoonba, Queensland, Australia.] The 12 spp. of waterfowl that bred either frequently or occasionally in north Queensland during 1959-1969 nested almost entirely during the wet seasons, usually Dec.-April, when suitable habitat was abundant and widespread and vegetation cover for nests and available food for young were at a maximum. Nesting requirements and habits were generally similar for all species except the colony-nesting magpie goose *(Anseranas semipalmata)* and black swan *(Cygnus altratus)*. Results of reproduction nevertheless were broadly similar because colonies were readily destroyed by flooding. Reproductive activity in all species was curtailed during 1961, when there was relatively little rainfall; clutch and brood sizes were comparatively small and there was little eventual population increment. Many young birds were added to the population, mainly as a result of greater survival of young in the first broods, after the extensive wet-season flooding of 1968, when there was prolonged reproductive activity.

Lavery, H. J. WILD DUCKS AND OTHER WATERFOWL IN QUEENSLAND. *Dep. Primary Industries, Queensland.* 58 p., illus. 1971. *WR 146: 113*

A handbook describing the appearance and habits of 18 spp., including seven game birds, of the waterfowl family Anatidae occurring in Queensland.

Lebret, T. WAARNEMINGEN VAN ZWEMENDEN (ANATINAE) IN VLEUGELRUI IN HET GETIJMILIEU VAN HET BIESBOSCH-HOLLANDS DIEP-HARINGVLIETGEBIED. [OBSERVATIONS OF SURFACE-FEEDING DUCKS (ANATINAE) IN WING MOLT IN TIDAL HABITAT IN THE BIESBOSCH-HOLLANDS DIEP-HARINGVLIET-AREA.] *Limosa* 44(1/2): 29-44, illus. 1971. [From Biol. Abstr. 53(3), 1972. In Dutch with English summ.] *WR 146: 113*

[Populierenlaan 7, Middelburg, Netherlands.]

Mikula, Edward J., Gerald F. Martz, and Carl L. Bennett, Jr. FIELD EVALUATION OF THREE TYPES OF WATERFOWL HUNTING REGULATIONS. *J. Wildl. Manage.* 36(2): 441-459. Apr. 1972. *WR 146: 113*

[Mich. Dep. Nat. Resour., Lansing.] In 1969, a Michigan experiment on a state game area compared the merits of three regulations: the point system, a simple two-bird limit, and the current species-oriented Mississippi Flyway-wide hunting regulations. Control of hunter activity permitted a complete bag check and an opinion poll. Observations of hunter performance provided estimates of violation rates and hunter selectivity in shooting. Crippling losses were not different between regulations. The highest duck harvest rates occurred under the two-bird limit, the point system had an intermediate harvest rate, and the flyway regulations, the lowest. Of the three regulations tested, the point system came closest to achieving the optimum utilization and manipulation of the waterfowl resource. It provided reasonable hunting opportunity, maximum hunter satisfaction, and acceptable hunter behavior.--From abstr.

Mitchell, T. R., and T. Ridgwell. THE FREQUENCY OF SALMONELLAE IN WILD DUCKS. *J. Med. Microbiol.* 4(3): 359-361. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 114*

[Fulham Hosp., London, England.] The fecal excretion rate of salmonellae in migratory wild ducks is higher than previous studies would indicate. Examination of 477 duck droppings during the winters of 1968/69 and 1969/70 gave isolation rates of just over 4%. The commonest serotype was *Salmonella typhimurium*; seven different phage-types were found, 2a being the most frequent.

Neradová-Valkounová, Jindra. THE IMPORTANCE OF SOME WILD DUCK SPECIES IN THE EPIZOOTIOLOGY OF CESTODOSES OF DOMESTIC DUCKS. *Vestn. Cesk. Spol. Zool.* 35(3): 222-228. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 114*

[Czech. Acad. Sci., Flemingovo nam. 2, Prague, Czechoslovakia.] The wild duck species *Anas platyrhynoha, A. crecca, Aythya ferina* and *A. fuligula* were the main source of infection of the domestic ducks which were bred on the fish ponds.

Richards, Tudor. INLAND WATER BIRDS IN NEW HAMPSHIRE. (PART I.) *N.H. Audubon Q.* 25(2): 49-55. Apr. 1972. *WR 146: 114*

Narrative account with sections on past slaughter of inland water birds and the subsequent recovery of the populations.

Schadt, James C., and William E. Southern. EFFECTS OF SOLAR CUES ON BASIC DIRECTIONAL PREFERENCES OF YOUNG MALLARDS. *Bird-Banding* 43(1): 47-53, 3 figs. Jan. 1972. *WR 146: 114*

[Northern Ill. Univ., DeKalb.] Summary: Orientation cage trials were conducted using Mallard ducklings 1 to 14 days old to determine if an unlearned directional preference was present and also what physical and biological factors affected the choice of directions. An innate directional preference for the northwest was shown, and the direction of initial movement from the center of the orientation cage seemed to be indicative of this preference. It was shown that solar cues were used by ducklings in their orientation. The time of the trial seemed to affect the bird's ability to select a preferred heading. This might indicate that further maturation and experience are required before a Mallard can use the sun during other times of the day for orientation. It appeared that a critical age of about five days was required before ducklings were able to indicate a directional preference. Wind direction, strain differences, and blind location appeared to have no effect on the directional responses of young Mallards.--Courtesy/ Paul A. Stewart.

Shields, James T., and H. Kenneth Neudahl. MALLARD RELEASE PROGRAM OF THE MINNESOTA FUTURE FARMERS OF AMERICA 1963-1969. *Minn. Dep. Educ.* iii + 69 p., 2 figs. June 1970. *WR 146: 114*

[Centennial Bldg., St. Paul, Minn.] An analysis of the program in which 54,261 mallards were successfully raised and released during 1963-1969.

Stieglitz, Walter O. FOOD HABITS OF THE FLORIDA DUCK. *J. Wildl. Manage.* 36 (2): 422-426. Apr. 1972. *WR 146: 114*

[Bur. Sport Fisheries & Wildl., Atlanta, Ga.] Gizzards from 85 Florida ducks *(Anas f. fulvigula)* collected from November 1960 through December 1966 in two Florida counties were analyzed. Plant materials comprised 89.9% of the total volume of all foods, and animal matter 10.0%. Plant foods appeared in 100% of the gizzards and animal foods in 51.2%. Thirty-six plant and 34 animal foods were recorded. A comparison is made between feeding habits of the species in the dissimilar everglades and brackish marsh habitat types.--From abstr.

Stott, Richard S., and David P. Olson. AN EVALUATION OF WATERFOWL SURVEYS ON THE NEW HAMPSHIRE COASTLINE. *J. Wildl. Manage.* 36(2): 468-477, 1 fig. Apr. 1972. *WR 146: 114*

[Univ. N.H., Durham.] Abstract: Fifteen simultaneous air and ground censuses of eight species of wintering sea ducks were conducted on a 22-mile section of the New Hampshire and Massachusetts coastline during 1968-71. In comparison with

surface counts, there was extreme variation in the aerial survey results even with identical aircraft, weather conditions, and observer. These discrepancies cast serious doubt on the usefulness of the aerial survey technique as an indicator of population trends of sea ducks. Size of aircraft, amount of cloud cover, and surface of ocean influenced the accuracy of aerial surveys, but these factors accounted for only a small part of the variability. A system of ecologically stratified ground censuses is recommended as an alternative to or a modification of the present aerial survey technique.

Sugden, Lawson G., and Lorin E. Harris. ENERGY REQUIREMENTS AND GROWTH OF CAPTIVE LESSER SCAUP. *Poultry Sci.* 51(2): 625-633, 8 figs. Mar. 1972. *WR 146: 115*

[Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada.] Abstract: Energy requirements of captive lesser scaup ducks *(Aythya affinis)* were determined from hatching to 12 weeks using a feeding trial and comparative slaughter method. Food intake was measured directly; metabolizable energy intake by a chromic oxide indicator and calorimetry; net energy for gain by comparative slaughter; and total heat production by difference. Live weight growth was measured and dry matter growth estimated from a regression of percentage dry matter on age. Food intake (dry) increased from 6.7 gm./duck/day during the 1st week to a peak of 52.5 gm. in the 5th week. Metabolizable energy intake averaged 5,575 Kcal. during the first 7 weeks, the assumed preflight period. Percentage carcass dry matter increased from 30 percent at 1 week to 45 percent at 12 weeks. A similar trend occurred in wild scaup though percentages were lower due to the lower fat content. Data are given for the proximate composition of carcasses for the first 12 weeks.

Trauger, David Lee. POPULATION ECOLOGY OF LESSER SCAUP *(AYTHYA AFFINIS)* IN SUBARCTIC TAIGA. *Ph.D. thesis, Iowa State Univ.* 121 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 115*

Young, Colin M. SHELDUCK PARLIAMENTS. *Ardea* 58(3/4): 125-130, illus. 1970. [From Biol. Abstr. 53(4), 1972. In English with Dutch summ.] *WR 146: 115*

[Laurentian Univ. Sudbury, Sudbury, Ontario, Canada.]

SWANS & GEESE

Bloch, Dorete. KNOPSVANEN *(CYGNUS OLOR)* SOM KILONIFUGL I DANMARK. [THE MUTE SWAN *(CYGNUS OLOR)* BREEDING IN COLONY IN DENMARK.] *Dansk Ornithol. Foren. Tidsskr.* 64: 152-162, 3 figs. 1970. In Danish with English summ. *WR 146: 115*

[Naturhistorisk Mus., Århus, Denmark.]

Cooper, James A., and Jon R. Hickin. CHRONOLOGY OF HATCHING BY LAYING SEQUENCE IN CANADA GEESE. *Wilson Bull.* 84(1): 90-92. Mar. 1972. *WR 146: 115*

[Univ. Mass., Amherst.] No correlation was found between laying sequence and order of hatching in *Branta canadensis*. An average of 24 hours elapsed between pipping and hatching. Hatchability of eggs was 89%.--Courtesy/ Paul A. Stewart.

Imber, M. J. THE IDENTITY OF NEW ZEALAND'S CANADA GEESE. *New Zealand Dep. Internal Affairs Wildl. Publ.* no. 134. 9 p., 1 fig. 1971. [Reprinted from Notornis 18(4): 253-261. Dec. 1971.] *WR 146: 115*

[Wildl. Serv., Dep. Internal Affairs, Wellington, New Zealand.] Abstract: Canada Geese *Branta canadensis* became established in New Zealand following the introduction of 50 from central or eastern U.S.A. in 1905. In 1920 ten more were brought from western Canada. Examination of plumage, weights and measurements of the present population shows that it belongs predominantly to the giant race *B. c. maxima* Delacour. There is a possibility that *B. c. canadensis* interbred to a limited extent with it. Behaviourally and ecologically *maxima* appears very well suited to the South Island habitats in which it multiplied quickly.

Korsak, Włodzimierz. ŁABĘDŹ NIEMY NA JEZIORZE LUBIATOWO. [THE MUTE SWAN ON LUBIATOWO LAKE.] *Chrońmy Przyrodę Ojczystą* 26(1): 42-43. Jan.-Feb. 1970. In Polish. *WR 146: 116*

MacInnes, Charles D., and Raj K. Misra. PREDATION ON CANADA GOOSE NESTS AT McCONNELL RIVER, NORTHWEST TERRITORIES. *J. Wildl. Manage.* 36(2): 414-422. Apr. 1972. *WR 146: 116*

[Univ. Western Ontario, London, Ontario, Canada.] Predation losses from nests of small Canada geese *(Branta canadensis)* were observed from 1965 to 1969, on a 62-square-km study area at the mouth of the McConnell River, Northwest Territories. It was concluded that in the absence of human disturbance, predation losses of eggs would have been small (approximately 10%) and would have varied little from year to year despite demonstrated changes in predator activity. A major exception to this might occur because of a high arctic fox *(Alopex lagopus)* population, which was not observed in the course of this study.--From abstr.

Oliveira, Carlos Marcos. *EPOMIDIOSTOMUM VOGELSANGI* EM *CYGNUS MELANCHORYPHUS*, NO RIO GRANDE DO SUL. [*EPOMIDIOSTOMUM VOGELSANGI* IN *CYGNUS MELANCHORYPHUS*, IN RIO GRANDE DO SUL.] *Rev. Med. Vet.* (São Paulo) 6(2): 159-182, illus. 1970. [From Biol. Abstr. 53(10), 1972. In Portuguese with English summ.] *WR 146: 116*

Owen, Myrfyn. SOME FACTORS AFFECTING FOOD INTAKE AND SELECTION IN WHITE-FRONTED GEESE. *J. Anim. Ecol.* 41(1): 79-92, 6 figs. Feb. 1972. *WR 146: 116*

[Wildfowl Trust, Slimbridge, Gloucestershire, England.] Time available for feeding, feeding rate and food selection are the major topics of discussion.

Rooth, J. THE OCCURRENCE OF THE GREYLAG GOOSE *ANSER ANSER* IN THE WESTERN PART OF ITS DISTRIBUTION AREA. *Ardea* 59(1/2): 17-27. 1971. [From Biol. Abstr. 53 (5), 1972. In English with Dutch summ.] *WR 146: 116*

A survey is given of the distribution of *A. anser* in the western part of its distribution area. In as many cases as possible estimated numbers are given of the breeding birds in the countries west of the USSR.

Sladen, Wm. J. L. STUDIES ON THE WHISTLING SWAN 1971. *Goshawk* 28(3): 19-20. Mar. 1972. *WR 146: 116*

[Johns Hopkins Univ., Baltimore, Md.]

Sladen, William J. L. WHISTLING SWAN COLOR MARKING PROGRAM. *Inland Bird Banding News* 44(3): 94-98, 1 fig. May-June 1972. *WR 146: 116*

[Johns Hopkins Univ., Baltimore, Md.] "Cooperators from all parts of the North American Continent are helping to map out the migratory movements and local behavior of a sample of the population that has been marked with easily recognized plastic neck collars. These marking methods follow a similar principle used by us on Antarctic Penguins; that of marking them in such a way that recapture is unnecessary to follow their movements. The identification can be read from a distance without disturbing the bird; thus many meaningful resightings are obtained during the bird's lifetime of 15 or more years."

Starkey, Edward E. A CASE OF INTERSPECIFIC HOMOSEXUALITY IN GEESE. *Auk* 89 (2): 456-457. Apr. 1972. *WR 146: 116*

[Wash. State Univ., Pullman.] In a breeding population of geese maintained in Carver Park, Minnesota, a male Canada goose *(Branta canadensis)* and a male snow goose *(Chen hyperborea)* formed a pair, remaining together from the middle of March until early May. The pair was not seen to attempt to copulate or build a nest.--Courtesy/ Paul A. Stewart.

Sterbetz, I. DIE ERNAEHRUNG DER IN UNGARN ZIEHENDEN UND UEBERWINTERNDEN SAATGAENSE. [FOOD OF MIGRATING AND WINTERING BEAN GEESE IN HUNGARY.] *Limosa* 44 (1/2): 54-60. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 116*

[Madártani Intéz., Budapest, Hungary.]

Tarshis, I. Barry. AN UNUSUAL FATALITY OF A YEARLING CANADA GOOSE. *Jack-Pine Warbler* 49(4): 128. Dec. 1971. *WR 146: 117*
[Patuxent Wildl. Res. Cent., Laurel, Md.] A necropsy revealed a mass of vegetation and grain lodged in the throat and attached to a five-inch piece of fishing line. The fishing line was entangled around the base of the bird's tongue and extended down into the bird's throat where it was attached to the three-inch mass of green vegetation and grain.

SHOREBIRDS, MARSH BIRDS & THEIR ALLIES

Baker, Myron Charles. A COMPARATIVE STUDY OF THE FORAGING ECOLOGY OF SIX SPECIES OF SHOREBIRDS (CHARADRIIFORMES, CHARADRII) ON THEIR BREEDING AND WINTERING RANGES. *Ph.D. thesis, Yale Univ.* 191 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 117*

Bucher, Klaus. DER BESTAND DES WEISSSTORCHES *(CICONIA CICONIA)* IN OBERBAYERN 1968-1970. [THE WHITE STORK POPULATION *(CICONIA CICONIA)* IN UPPER BAVARIA IN 1968-1970 (GERMANY).] *Ans. Ornithol. Ges. Bayern* 10(2): 97-99. 1971. [From Biol. Abstr. 53(4), 1972. In German.] *WR 146: 117*
[Helmtrudenst. 5, Munich, Germany.] Nesting pairs without and with young, total number of young and individual storks which were observed in areas in Upper Bavaria in 1968, 1969, and 1970, are presented in a table.

Burckhardt, Dieter, and Adelheid Studer-Thiersch. ÜBER DAS ZUGVERHALTEN DER SCHWEIZERISCHEN FISCHREIHER *ARDEA CINEREA* AUFGRUND DER BERINGUNGSERGEBNISSE. [ON THE MIGRATION OF SWISS GRAY HERONS *(ARDEA CINEREA)* BASED UPON BANDING RETURNS.] *Ornithol. Beob.* 67(5/6): 230-255, 9 figs. Dec. 1970. In German with French summ. *WR 146: 117*
[Adlerstrasse 12, Basel, Switzerland.]

Campbell, R. Wayne. COASTAL RECORDS OF THE LONG-BILLED CURLEW FOR BRITISH COLUMBIA. *Canadian Field Nat.* 86(2): 167-168. Apr.-June 1972. *WR 146: 117*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Abstract: Coastal records of the Long-billed Curlew in British Columbia, from 1958 through 1970, are presented. The bird is presently a rare spring transient through the Vancouver area and only casual in fall here. On Vancouver Island the bird can be considered accidental in occurrence.

Dickerman, Robert W. FURTHER NOTES ON THE PINNATED BITTERN IN MEXICO AND CENTRAL AMERICA. *Wilson Bull.* 84(1): 90. Mar. 1972. *WR 146: 117*
[Cornell Univ. Med. School, New York, N.Y.] The taxonomy and distribution of *Botaurus pinnatus caribaeus* are discussed.--Courtesy/ Paul A. Stewart.

Fantin, Gino. NOTIZIE DAL VENETO: IL FALAROPO BECCO LARGO. [REPORTS FROM (THE PROVINCE OF) VENICE: THE GREY PHALAROPE.] *Riv. Ital. Ornitol.* 41(1): 17-24, illus. 1971. [From Biol. Abstr. 53(8), 1972. In Italian.] *WR 146: 117*
"Phalaropus fulicarius."

Forsythe, Dennis M. LONG-BILLED CURLEW WITH SUPERNUMERARY HALLUX. *Auk* 89 (2): 457, 1 fig. Apr. 1972. *WR 146: 117*
[The Citadel, Charleston, S.C.] Courtesy/ Paul A. Stewart.

Gatter, Wulf. AUFENTHALT UND RAEUMLICHE BEWEGUNGEN EINER FLUSSREGEN-PFEIFER-POPULATION *(CHARADRIUS DUBIUS).* [SOJOURN AND LOCAL MOVEMENTS OF A LITTLE RINGED PLOVER POPULATION *(CHARADRIUS DUBIUS).*] *Ans. Ornithol. Ges. Bayern* 10(2): 100-106. 1971. [From Biol. Abstr. 53(4), 1972. In German with English summ.] *WR 146: 117*
[Hans-Thoma-Weg 31, Kirchheim, Germany.] Movements in relation to breeding and feeding habits of the birds are discussed.

Gochfeld, Michael. OBSERVATIONS ON THE STATUS, ECOLOGY, AND BEHAVIOR OF SORAS WINTERING IN TRINIDAD, WEST INDIES. *Wilson Bull.* 84(2): 200-201. June 1972. *WR 146: 118*

[Am. Mus. Nat. Hist., New York, N.Y.] At least 40 soras *(Porzana carolina)* were found in an area of 26 ha. of marsh.—Courtesy/ Paul A. Stewart.

Greve, Karl, and Günter Pannach. DER LIMIKOLENZUG IM BRAUNSCHWEIGER RIESELFELD (SÜDOST-NIEDERSACHSEN). [THE SHOREBIRD MIGRATION IN THE BRUNSWICK IRRIGATED FIELDS (SOUTHEAST LOWER SAXONY).] *Ornithol. Mitteil.* 20(11): 225-232, [2 figs.]. Nov. 1968. In German. *WR 146: 118*

[Siegfriedstr. 27, Braunschweig, Germany.] Annotated list of 33 spp.

Hoelzinger, Jochen, and Klaus Schilhansl. ZUR GEWICHTSENTWICKLUNG JUNGER FLUSSREGENPFEIFER *(CHARADRIUS DUBIUS).* [ON THE INCREASE OF BODY WEIGHT OF YOUNG LITTLE RINGED PLOVERS *(CHARADRIUS DUBIUS).*] *Anz. Ornithol. Ges. Bayern* 10(2): 107-109, illus. 1971. [From Biol. Abstr. 53(4), 1972. In German with English summ.] *WR 146: 118*

[Silcherweg 22, Oberelchingen, Germany.] The increase in body weight of 46 little ringed plovers is shown at an age ranging from 0 to 20 days after hatching.

Holmes, R. T. DENSITY, HABITAT, AND THE MATING SYSTEM OF THE WESTERN SANDPIPER *(CALIDRIS MAURI). Oecologia* (Berlin) 7(2): 191-208, illus. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 118*

[Dartmouth Coll., Hanover, N.H.]

Holmes, Richard T. ECOLOGICAL FACTORS INFLUENCING THE BREEDING SEASON SCHEDULE OF WESTERN SANDPIPERS *(CALIDRIS MAURI)* IN SUBARCTIC ALASKA. *Am. Midl. Nat.* 87(2): 472-491, 4 figs. Apr. 1972. *WR 146: 118*

[Dartmouth Coll., Hanover, N.H.] Studies of the breeding system ecology of the western sandpiper *(Calidris mauri)* were conducted in the summers of 1966-1969 on the Yukon-Kuskokwim Delta in western Alaska. Western sandpipers arrive as soon as the snow begins to melt, establish territories on heath tundra, pair and nest once. Second nestings are restricted to replacement clutches. As soon as breeding is completed, the adults shift to coastal habitats, begin molt, and by early to mid-July move S on migration. Young *mauri* follow about two to three weeks later. After their arrival on Pacific coast feeding areas, the adults continue their prebasic molt, completing it by late October. The single nesting and early departure of western sandpipers from the breeding areas are related to a decreasing food supply in an otherwise favorable environment.—From abstr.

Hopkins, Milton N., Jr. DOES THE LITTLE BLUE HERON BREED IN THE WHITE PLUMAGE? *Oriole* 36(4): 30-33. Dec. 1971. *WR 146: 118*

[Rt. 5, Fitzgerald, Ga.] The little blue heron *(Florida caerulea)* never breeds in the white plumage and only on rare occasions in the mottled plumage.

Jozefik, Mieczyslaw. STUDIES ON THE SQUACCO HERON, *ARDEOLA RALLOIDES* (SCOP.): PART V. INTRASPECIFIC ISOLATION AND THE ECOLOGICAL ZONES OF THE RANGE. *Acta Ornithol. Warsz.* 12(11): 445-504, illus. 1970. [From Biol. Abstr. 53(8), 1972. In English with Polish and Russian summ.] *WR 146: 118*

[Polish Acad. Sci., Warsaw, Poland.]

Köhler, Karl-Heinz. ZUR SITUATION DES TRIELS *(BURHINUS OEDICNEMUS)* IN NIEDERSACHSEN. [ON THE STATUS OF THE STONE CURLEW *(BURHINUS OEDICNEMUS)* IN LOWER SAXONY.] *Ornithol. Mitt.* 23(12): 232-233. Dec. 1971. In German. *WR 146: 118*

[Parkstrasse 11, Veersaen, Germany.]

Köpke, Gerd. BEOBACHTUNGEN AN GOLDREGENPFEIFER-BRUTPLÄTZEN IM WESTLICHEN NIEDERSACHSEN. [OBSERVATIONS ON THE EURASIAN GOLDEN PLOVER BREEDING GROUNDS IN WESTERN LOWER SAXONY.] *Ornithol. Mitt.* 23(5-6): 87-90. May-June 1971. In German with English summ. *WR 146: 118*

[Von-der-Marck-Strasse 8, Hamm, Germany.]

Kushlan, James A. AERIAL FEEDING IN THE SNOWY EGRET. *Wilson Bull.* 84(2): 199-200. June 1972. *WR 146: 119*
[Univ. Miami, Coral Gables, Fla.] Snowy egrets *(Leucophoyx thula)* flew close to the water dragging toes of both feet in the water. Food was taken from the water when in flight, without hovering.--Courtesy/ Paul A. Stewart.

Kuyken, E., and G. Burggraeve. EEN KROMBEKSTRANDLOPER *(CALIDRIS FERRUGINEA)* NA TWEE WEKEN TERUGGEMELD OP DE KLEINE ANTILLEN (AM.). [A REMARKABLE RECOVERY OF A CURLEW SANDPIPER *(CALIDRIS FERRUGINEA)* ON THE LESSER ANTILLES (AM.).] *Gerfaut* 61(2): 162-163. 1971. In Dutch with French and English summ. *WR 146: 119*
Summary: In 1969, an abnormal influx of curlew sandpipers occurred from late August till the middle of September. Figures are given for the mud flats at Zeebrugge (Northsea-coast). During the night of 1-2 September 1969, we ringed 7 curlew sandpipers near a brackish pond at Zeebrugge. One of these birds was shot in the early morning of 16 September 1969 at Barbados (West-Indies), in an artificial salt march. This is the first recovery of a Belgian bird in that part of the world. Our bird crossed at least 7,000 Km S.-W. in only 340 hours. This species is a very scarce visitor to the Antilles and the American continent.

Kuyt, K. FIRST RECORD OF THE CATTLE EGRET IN THE NORTHWEST TERRITORIES. *Canadian Field Nat.* 86(1): 83-84. Jan.-Mar. 1972. *WR 146: 119*
[Canadian Wildl. Serv., Fort Smith, N.W.T., Canada.]

Liscinsky, Stephen A. THE PENNSYLVANIA WOODCOCK MANAGEMENT STUDY. *Pa. Game Comm. Res. Bull.* no. 171. 95 p., illus. 1972. *WR 146: 119*
Topics covered are: spring migration, courtship and breeding, nesting, the juvenal, the adult, foods and feeding, fall migration, reproduction, habitat, decimating factors, habitat manipulation, management of specific cover types, habitat management planning, hunting regulations, and other management considerations.

Littlefield, Carroll D. AN UNUSUAL NEST OF THE SANDHILL CRANE. *Wilson Bull.* 84(1): 93. Mar. 1972. *WR 146: 119*
[Univ. Ariz., Tucson.] The nest of a sandhill crane *(Grus canadensis)* consisted of two mounds of vegetation with an egg on each mound. One had the appearance of a normal nest, while the other consisted of a small accumulation of broad-fruited bur-reed *(Sparganium eurycarpum)*. The second mound was situated 73 centimeters south of the normal structure.--Courtesy/ Paul A. Stewart.

Maclean, Gordon L. CLUTCH SIZE AND EVOLUTION IN THE CHARADRII. *Auk* 89(2): 299-324, 11 figs. Apr. 1972. *WR 146: 119*
[Univ. Natal, Pietermaritzburg, South Africa.] Courtesy/ Paul A. Stewart.

Mester, Horst. FEDERLINGE AUF LIMIKOLEN-GELEGEN. [FEATHER LICE ON LIMICOLA EGGS.] *J. Ornithol.* 112(2): 109-130, illus. 1971. [From Biol. Abstr. 53(12), 1972. In German with English summ.] *WR 146: 119*

Mukherjee, Ajit Kumar. FOOD HABITS OF WATER BIRDS OF THE SUNDARBAN, 24 PARGANAS DISTRICT, WEST BENGAL INDIA: II. HERONS AND BITTERNS. *J. Bombay Nat. Hist. Soc.* 68(1): 127-152. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 119*
[Zool. Surv. India, Calcutta, India.] Analysis of the stomach contents of four herons and one bittern indicates that the above birds are helpful to agriculture to some extent.

Norton, David W. INCUBATION SCHEDULES OF FOUR SPECIES OF CALIDRIDINE SANDPIPERS AT BARROW, ALASKA. *Condor* 74(2): 154-176, 7 figs. Summer 1972. *WR 146: 119*
[Univ. Alaska, College.] Incubation during egg laying, incubation after clutch completion, and hatching are discussed. The study involved chiefly the dunlin *(Calidris alpina)*, Baird's sandpiper *(C. bairdii)*, and pectoral sandpiper *(C. melanotos)*.--Courtesy/ Paul A. Stewart.

Norton, David W., and Uriel N. Safriel. HOMING BY NESTING SEMIPALMATED SANDPIPERS DISPLACED FROM BARROW, ALASKA. *Bird-Banding* 42(4): 295-297. Oct. 1971. *WR 146: 120*

[Univ. Alaska, College.] One pair of *Calidris pusilla* returned ten days later to incubate their eggs after being displaced 400 km.—Courtesy/ Paul A. Stewart.

Nowicki, Timothy. 1971 SPRING MIGRATION OF SHOREBIRDS AT TWO SMALL STUDY AREAS IN CENTRAL MICHIGAN. *Jack-Pine Warbler* 49(4): 107-114, 1 fig. Dec. 1971. *WR 146: 120*

[Cent. Cultural & Nat. Hist., Central Mich. Univ., Mt. Pleasant.] A total of 16 spp. and 819 individuals were observed in 1971. Large increases in total individuals for 1971, as compared to the 1955 and 1961 totals, were recorded for the killdeer and semipalmated sandpiper. Dunlins were not as numerous as in 1955 and 1961. There has been a constant decline of lesser yellowlegs at these central Michigan pond areas since 1955. The major concentration of shorebirds for the 1971 and 1955 surveys were in mid- to late April and mid-May. The 1961 survey, however, showed a major concentration in mid-May. The greatest number of individuals seen in all three years fell between 21 and 24 May.—From summ.

Page, G., and B. Fearis. SEXING WESTERN SANDPIPERS BY BILL LENGTH. *Bird-Banding* 42(4): 297-298. Oct. 1971. *WR 146: 120*

[Point Reyes Bird Observatory, P.O. Box 321, Bolinas, Calif.] Bill length is a useful measurement for determining the sex of western sandpipers *(Ereunetes mauri)*.—Courtesy/ Paul A. Stewart.

Prater, A. J. THE ECOLOGY OF MORECAMBE BAY. III. THE FOOD AND FEEDING HABITS OF KNOT *(CALIDRIS CANUTUS* L.) IN MORECAMBE BAY. *J. Appl. Ecol.* 9(1): 179-194, 5 figs. Apr. 1972. *WR 146: 120*

[British Trust Ornithol., Beech Grove, Tring, Hertfordshire, England.]

Siegfried, W. R. COMMUNAL ROOSTING OF THE CATTLE EGRET. *Trans. Roy. Soc. South Africa* 39(4): 419-443, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 120*

[Univ. Cape Town, Cape Town, South Africa.] In *Ardeola ibis* the whole advantage of social roosting cannot be explained only in terms of protection from predators, shelter for adverse weather and/or conservation of energy at night. Data are presented in support of the claim that in *A. ibis* an important, if not the main, function of communal roosting is in assisting individuals to maintain contact with each other. The value of this behavior rests in more efficient finding and exploitation of localized food resources. It is suggested that the gregarious roosting of *A. ibis* had been evolved primarily in relation to the food situation, and that communal roosting can be viewed as an extension of the principle of feeding by enhancement.

Siegfried, W. R. THE NEST OF THE CATTLE EGRET. *Ostrich* 42(3): 193-197. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 120*

[Univ. Cape Town, Cape Town, South Africa.] The nest of the cattle egret *Ardeola ibis* is described with particulars of its composition. Data on number, size and weight of sticks in a nest are given. The findings are related to the availability of nest-material, and *A. ibis'* stick-stealing habit. This behavior is an important factor contributing towards limiting breeding success.

Siegfried, W. R. ASPECTS OF THE FEEDING ECOLOGY OF CATTLE EGRETS *(ARDEOLA IBIS)* IN SOUTH AFRICA. *J. Anim. Ecol.* 41(1): 71-78, 4 figs. Feb. 1972. *WR 146: 120*

[Univ. Cape Town, Cape Town, South Africa.] "The paper reports an analysis of the number and size of food items eaten by cattle egrets, rather than taxonomic differences in the composition of the diet. Seasonal change in the quantity (wet weight) of food consumed per unit foraging time is examined and related to the weight and age of the bird."

Siegfried, W. R. BREEDING SUCCESS AND REPRODUCTIVE OUTPUT OF THE CATTLE EGRET. *Ostrich* 43: 43-55. 1972. *WR 146: 121*

[Univ. Cape Town, Cape Town, South Africa.] Summary: Quantitative data on clutch and brood sizes, and hatching and rearing success are given for Cattle Egret *Ardeola ibis* populations breeding in the south-western Cape Province, South Africa. Overall breeding success was relatively low: an average of 34% of all eggs laid produced fledged young. Losses were proportionately greatest during the egg-laying phase of the nesting cycle. Mortality was heaviest in nestlings aged between one and two weeks. Starvation through inability of the parents to deliver adequate quantities of food was the main cause of chick-mortality. In terms of reproductive output, an average of 0.43 young was successfully raised to independence by each bird that attempted to breed.

Sorci, G., B. Massa, and G. Cangialosi. PASSO AUTUNNALE E PRIMAVERILE 1969-70 DI AQUATICI E TRAMPOLIERI IN SICILIA. [FALL AND SPRING 1969-70 PASSAGE OF WATER AND STILT (LIMICOLINE) BIRDS IN SICILY.] *Riv. Ital. Ornitol.* 41(2): 61-85, illus. 1971. [From Biol. Abstr. 53(8), 1972. In Italian.] *WR 146: 121*

[Oss. Ornitol. Siciliano, Porticello, Italy.]

Stănescu, Dan. OBSERVATII ASUPRA SPECIILOR *RECURVIROSTRA AVOSETTA* L. 1758 (CIOCÎNTORS) SI *STERNA HIRUNDO* L. 1758 (CHIRĂ), ÎNTR-O COLONIE MIXTĂ. [OBSERVATIONS ON THE AVOCET *(RECURVIROSTRA AVOSETTA)* AND THE COMMON TERN *(STERNA HIRUNDO)* IN A BREEDING COLONY ON THE BEIBUGEAC ISLAND (EASTERN ROMANIA).] *Ocrotirea Naturii* 13(1): 73-82, 12 figs. 1969. In Romanian with German summ. *WR 146: 121*

Timmis, William H. BREEDING AND BEHAVIOUR OF THE NORTH ISLAND WEKA RAIL AT CHESTER ZOO *(GALLIRALLUS AUSTRALIS GREYI)*. *Aviculr. Mag.* 78(2): 53-64, 6 figs. + plates. Mar.-Apr. 1972. *WR 146: 121*

Topics covered are courtship and sexual behavior, copulation, nest building, incubation, the chicks, feeding the chicks, and voice.

Yrizarry, John C. BLACK-TAILED GODWIT AT BRIGANTINE REFUGE. *Cassinia* 53: 41-42. 1971-1972. *WR 146: 121*

[22 Chester Court, Brooklyn, N.Y.] Fourth observation of the black-tailed godwit in North America.

SEABIRDS & THEIR ALLIES

Ainley, David G., and T. James Lewis. COLONY ATTENDANCE OF FARALLON PIGEON GUILLEMOTS. *Point Reyes Bird Observatory Newsletter* no. 21. p. 4-5, 1 fig. Apr. 1972. *WR 146: 121*

Bailey, Edgar P., and Glenn H. Davenport. DIE-OFF OF COMMON MURRES ON THE ALASKA PENINSULA AND UNIMAK ISLAND. *Condor* 74(2): 215-219, 2 figs. Summer 1972. *WR 146: 121*

[Aleutian Islands Natl. Wildl. Refuge, Pouch 2, Cold Bay, Alaska.] More than 100,000 common murres *(Uria aalge)* were reported dead on 450 mi. of coastline. "The die-off most likely resulted from starvation precipitated by severe weather."--Courtesy/ Paul A. Stewart.

Bloesch, Manfred. UEBER DIE EINFLUSS VON PHENOBARBITAL AUF DAS BRUTVERHALTEN DER SILBERMOEWE *(LARUS ARGENTATUS ARGENTATUS* PONTOPP). [EFFECTS OF PHENOBARBITAL ON BROOD CARE BEHAVIOR OF THE HERRING GULL *(LARUS ARGENTATUS ARGENTATUS)*.] *Z. Tierpsychol.* 28(5): 487-493, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 121*

[Univ.-Nervenklin. Poliklin., Erlangen, Germany.] A collection of symptoms clinically known as Durchgangs Syndrome, a general disruption of cerebral function, can be induced experimentally in animals by barbiturates.

Burger, Joanna. THE USE OF A FISH-EYE LENS TO STUDY NEST PLACEMENT IN FRANKLIN'S GULLS. *Ecology* 53(2): 362-364, 4 figs. Early Spring 1972. *WR 146: 122*

[Univ. Minn., Minneapolis.] Abstract: A Franklin's Gull colony in northwestern Minnesota was sampled to determine if there is a correlation between closeness of adjacent nests and visibility. A method of vegetation analysis using a fish-eye lens is presented. Franklin's Gulls select nest sites which are least visible to neighboring gulls.--Courtesy/ Paul A. Stewart.

Collins, Charles T., and Mary LeCroy. ANALYSIS OF MEASUREMENTS, WEIGHTS, AND COMPOSITION OF COMMON AND ROSEATE TERN EGGS. *Wilson Bull.* 84(2): 187-192. June 1972. *WR 146: 122*

[Calif. State Coll., Long Beach.] *"Sterna hirundo* and *S. dougallii."*--Courtesy/ Paul A. Stewart.

Cooke, F., and R. K. Ross. DIURNAL AND SEASONAL ACTIVITIES OF A POST-BREEDING POPULATION OF GULLS IN SOUTHEASTERN ONTARIO. *Wilson Bull.* 84(2): 164-172, 2 figs. June 1972. *WR 146: 122*

[Queen's Univ., Kingston, Ontario, Canada.] The daily numbers of gulls on the dump were found to be influenced by food supply, severe fright stimulus, availability of water, and weather. The period after a warm front was associated with an increase in numbers while that after a cold front was usually associated with a decrease. First and second year gulls were found to spend considerably more time feeding than the adult and third year birds. The mean weekly numbers were found to increase gradually to a peak in late November or early December. This is thought to be due to the influx of herring gulls from the western Great Lakes. The final disappearance of gulls from the Kingston area came just after the local freezing of Lake Ontario and it is postulated that the lack of drinking water near the dump triggered the departure.--From summ. Courtesy/ Paul A. Stewart.

Dawson, William R., Jack W. Hudson, and Richard W. Hill. TEMPERATURE REGULATION IN NEWLY HATCHED LAUGHING GULLS *(LARUS ATRICILLA). Condor* 74(2): 177-184, 3 figs. Summer 1972. *WR 146: 122*

[Univ. Mich., Ann Arbor.] Birds tested had moderately effective temperature controls at ambient temperatures between 21.7 and 41.2°C. Decline in rectal temperature was more conspicuous in ambient temperatures below 20°C. The chicks were also quite effective in controlling their temperatures at higher ambient temperatures, remaining an average of 2.3°C cooler than their surroundings during exposure for two hours to ambient temperatures of 44.5 to 45.2°C. Oxygen consumption decreased conspicuously as the young gulls became markedly hypothermic in the course of two hours of exposure to ambient temperatures below 20°C. Breathing rates of hatchlings greatly increased when exposed to high ambient temperatures. The increase was achieved without a rise in the rate of oxygen consumption.--From summ. Courtesy/ Paul A. Stewart.

Dinsmore, James J. SOOTY TERN BEHAVIOR. *Bull. Fla. State Mus. Biol. Sci.* 16 (3): 129-179, 8 figs. 21 Jan. 1972. Price $1.00. *WR 146: 122*

[Univ. Tampa, Tampa, Fla.] A four-year study of the breeding behavior of sooty tern *(Sterna fuscata)* was made at Bush Key, Dry Tortugas in the southeastern Gulf of Mexico. The results are compared with the behavior of other terns and the differences discussed, particularly in regard to the pelagic environment the sooty tern inhabits.--From synopsis.

Dinsmore, James J., and William B. Robertson, Jr. SOOTY TERN FEEDING ON MOTHS. *Auk* 89(2): 440. Apr. 1972. *WR 146: 122*

[Univ. Tampa, Tampa, Fla.] Sooty terns *(Sterna fuscata)* fed on noctuid moths. --Courtesy/ Paul A. Stewart.

Donaldson, Grace. ROSEATE TERN BREEDS DURING ITS SECOND YEAR. *Bird-Banding* 42(4): 300. Oct. 1971. *WR 146: 122*

[Am. Mus. Nat. Hist., New York, N.Y.] *"Sterna dougallii."*--Courtesy/ Paul A. Stewart.

Erskine, Anthony J. THE GREAT CORMORANTS OF EASTERN CANADA. *Canadian Wildl. Serv. Occas. Pap.* no. 14. 23 p. 1972. *WR 146: 123*
"Phalacrocorax carbo."

Evans, R. M. SOME EFFECTS OF WATER LEVEL ON THE REPRODUCTIVE SUCCESS OF THE WHITE PELICAN AT EAST SHOAL LAKE, MANITOBA. *Canadian Field Nat.* 86(2): 151-153. Apr.-June 1972. *WR 146: 123*
[Univ. Manitoba, Winnipeg, Manitoba, Canada.] Abstract: Historical records combined with personal observations from 1967 to 1971 indicate that islands which become unsuitable for breeding due to water level changes may be recolonized when breeding habitat is restored.

Firth, Roderick, Jr. A TECHNIQUE FOR BANDING NESTLING GULL CHICKS. *Bird-Banding* 42(4): 301. Oct. 1971. *WR 146: 123*
[Univ. Mass., Amherst.] The bands were applied to newly-hatched chicks and held in place by rubber collars.--Courtesy/ Paul A. Stewart.

Fisher, Harvey I. SYMPATRY OF LAYSAN AND BLACK-FOOTED ALBATROSSES. *Auk* 89 (2): 381-402, 12 figs. Apr. 1972. *WR 146: 123*
[Southern Ill. Univ., Carbondale.] Laysan *(Diomedea immutabilis)* and black-footed albatrosses *(D. nigripes)* are reproductively isolated by their inability to enter interspecific behavior. The most important barriers to the formation of mixed pairs include differences in posture and gait, temperament, and courtship behavior.--From summ. Courtesy/ Paul A. Stewart.

Fisher, Harvey I., and James R. Fisher. THE OCEANIC DISTRIBUTION OF THE LAYSAN ALBATROSS, *DIOMEDEA IMMUTABILIS*. *Wilson Bull.* 84(1): 7-27, 8 figs. + 1 pl. Mar. 1972. *WR 146: 123*
[Southern Ill. Univ., Carbondale.] All 276 oceanic records of Laysan albatrosses *(Diomedea immutabilis)* are within the limits of 8 to 59° N and 132° E to 116° W in the North Pacific Ocean. The primary range, however, is between 28 and 52° N and 140° E-120° W. These birds obtain 90% of their food from plankton-eating squid; hence their distribution is associated with the distribution of plankton. Four factors directly and indirectly affect the volume of plankton in an area: nutrients, water movements, water temperature, and water salinity.--Courtesy/ Paul A. Stewart.

Haverschmidt, F. ZUM ZUG VON *PUFFINUS GRAVIS* IM NOERDLICHEN ATLANTIK. [ON THE MIGRATION OF *PUFFINUS GRAVIS* IN THE NORTHERN ATLANTIC.] *J. Ornithol.* 112 (4): 459-460. 1971. [From Biol. Abstr. 53(11), 1972. In German.] *WR 146: 123*
[16 Wolfskuilstraat, Ommen, Netherlands.]

Haverschmidt, F. FURTHER EVIDENCE OF THE 'PORTLANDICA' PLUMAGE PHASE OF TERNS. *British Birds* 65(3): 117-119. Mar. 1972. *WR 146: 123*
[16 Wolfskuilstraat, Ommen, Netherlands.] Summary: On the coast of Surinam, in north-eastern South America, four species of terns, Common *Sterna hirundo*, Little *S. albifrons*, Royal *S. maxima* and Cayenne *S. sandvicensis eurygnatha*, spend their period of immaturity during the northern summer. The *'portlandica'* plumage phase of these terns is described. The evidence strongly suggests that this is the normal plumage of immatures.

Hays, Helen. ROSEATE TERN, *STERNA DOUGALLII*, BANDED ON ATLANTIC COAST RECOVERED ON PACIFIC. *Bird-Banding* 42(4): 295. Oct. 1971. *WR 146: 123*
[Am. Mus. Nat. Hist., New York, N.Y.] The bird was banded on Great Gull Island, New York, and recovered on Gorgona Island off the Pacific coast of Colombia, South America. The recovery was made 24 days after the bird was last seen at its banding place.--Courtesy/ Paul A. Stewart.

Imber, M. J. SEABIRDS FOUND DEAD IN NEW ZEALAND IN 1969. *New Zealand Dep. Intern. Aff. Wildl. Publ.* no. 135. 5 p. 1971. [Reprinted from Notornis 18(4): 305-309. Dec. 1971.] *WR 146: 124*

[Wildl. Serv., Dep. Internal Affairs, Wellington, New Zealand.] Abstract: During 1969, 1,665 miles of coast were patrolled by 99 members of O.S.N.Z. and 2,534 dead seabirds were found. No species was exceptionally abundant but there was a high proportion of albatrosses relative to other years. The rarest specimens were an Oriental Cuckoo *Cuculus saturatus horsfieldi* and an Arctic Tern *Sterna paradisaea*.

Johnson, A. R., and P. Isenmann. LA NIDIFICATION ET LE PASSAGE DE LA MOUETTE MÉLANOCÉPHALE *(LARUS MELANOCEPHALUS)* EN CAMARGUE. [NIDIFICATION AND MIGRATION OF THE COMMON GULL *(LARUS MELANOCEPHALUS)* IN THE CAMARGUE REGION (SOUTHERN FRANCE).] *Alauda* 39(2): 105-111. 1971. [From Biol. Abstr. 53(4), 1972. In French with English summ.] *WR 146: 124*

[Sta. Biol. de la Tour du Valat, Le Sambuc, France.]

Langham, N. P. E. CHICK SURVIVAL IN TERNS *(STERNA* SPP.) WITH PARTICULAR REFERENCE TO THE COMMON TERN. *J. Anim. Ecol.* 41(2): 385-395, 2 figs. June 1972. *WR 146: 124*

[Univ. Penang, Penang, Malaysia.]

LeCroy, Mary. YOUNG COMMON AND ROSEATE TERNS LEARNING TO FISH. *Wilson Bull.* 84(2): 201-202. June 1972. *WR 146: 124*

[Am. Mus. Nat. Hist., New York, N.Y.] Young common and roseate terns *(Sterna hirundo* and *S. dougallii)* are fed by their parents during the long period of perfecting fish-catching techniques. Partial dependence on the parents may extend even to the wintering quarters.--Courtesy/ Paul A. Stewart.

le Maire, M. UN PHENOMENE D'ÉCOCHIMIE: LES GLANDES À SEL DES OISEAUX MARINS. [AN ECOCHEMICAL PHENOMENON: THE SALT GLANDS OF MARINE BIRDS.] *Aves* 8(1): 18-20, illus. 1971. [From Biol. Abstr. 53(11), 1972. In French.] *WR 146: 124*

[39, Vierdelancierslaan, Tienen, Belgium.] Marine birds whose kidneys have only a slight capacity for salt excretion have a second system of osmoregulatory organs: the salt glands, which consist of the nasal glands and Harder's glands. Certain members of the species *Anas platyrhynchos* especially those of northern Europe adapt to sea water when fresh water supplies are frozen. During this period the nasal glands quadruple in size and the flow of excreted fluid increases.

Lemmetyinen, Risto. NEST DEFENSE BEHAVIOUR OF COMMON AND ARCTIC TERNS AND ITS EFFECTS ON THE SUCCESS ACHIEVED BY PREDATORS. *Ornis Fenn.* 48(1): 13-24, illus. 1971. [From Biol. Abstr. 53(10), 1972. In English with Finnish summ.] *WR 146: 124*

[Univ. Turku, Turku, Finland.]

Maxwell, Terry C. SPRING MIGRATION OF THE GANNET IN FLORIDA WATERS. *Wilson Bull.* 84(2): 198-199. June 1972. *WR 146: 124*

[1025 Cactus Lane, San Angelo, Tex.] Spring migration of gannets *(Morus bassanus)* in Florida starts by late February and is complete in May. Adults start migration earlier than subadults and immatures, with a mixing of age classes in April.--Courtesy/ Paul A. Stewart.

Mills, J. A. THE RELIABILITY OF SIGHT RECOVERIES OF BANDED RED-BILLED GULLS. *New Zealand Dep. Intern. Aff. Wildl. Publ.* no. 131. 2 p. 1971. [Reprinted from Australian Bird Bander 9(4): 83-84. Dec. 1971.] *WR 146: 124*

[New Zealand Wildl. Branch, Dep. Internal Affairs, Wellington, New Zealand.] Abstract: Tests were carried out to assess the reliability of reading band numbers of Red-billed Gulls *Larus novaehollandiae scopulinus* using field glasses. Most Red-billed Gulls can be baited to within 20 feet. At distances of 10 and 15 feet only 1.7% of the bands were misread, but at 20 feet the number of mistakes increased significantly to 5.0%. The total number of mistakes made up to

20 feet was only 2.2% higher than the number of mistakes made when reading the band of a captured bird. Sight records are therefore considered to constitute a reliable source of recovery data.

Müller-Schwarze, D., and C. Müller-Schwarze. ANTIPREDATOR AND SOCIAL BEHAVIOR IN ADÉLIE PENGUINS *(PYGOSCELIS ADELIAE)*. *Antarct. J. U.S.* 6(4): 99-100. Aug. 1971. [From J. Mammal. 53(1, suppl.), 1972.] *WR 146: 125*

Perdeck, A. C. HOMING TENDENCIES OF BLACK-HEADED GULLS IN THE KRAMER-CAGE? *Netherlands J. Zool.* 21(2): 172-179, illus. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 125*
[Inst. Ecol. Res., Arnhem, Netherlands.] Black-headed gulls, taken as adults from their breeding place, and tested 30-170 km north or south of the colony, did not show a significant homing tendency when tested in Kramer-cage.

Raynor, Gilbert S. OVERLAND FEEDING FLIGHTS BY THE COMMON TERN ON LONG ISLAND. *Kingbird* 22(2): 63-71, 1 fig. May 1972. *WR 146: 125*
[Schultz Rd., Manorville, Long Island, N.Y.] Observations of common tern *(Sterna hirundo)* include: relationship to breeding colonies, seasonal occurrence, diurnal patterns, number of birds, flight altitude, and behavior.

Schonart, Edgar, and Frauke Schonart. RÄTSELHAFTES VERHALTEN BEI EINJÄHRIGEN SILBERMÖWEN *(LARUS ARGENTATUS)*. [PUZZLING BEHAVIOR OF A YEARLING HERRING GULL *(LARUS ARGENTATUS)*.] *Ornithol. Mitt.* 23(7-8): 129-130. July-Aug. 1971. In German. *WR 146: 125*
[Rebenstrasse 57, Oldenburg, Germany.]

Schreiber, Ralph W., and Robert W. Risebrough. STUDIES OF THE BROWN PELICAN. I. STATUS OF BROWN PELICAN POPULATIONS IN THE UNITED STATES. *Wilson Bull.* 84 (2): 119-135, 1 fig. June 1972. *WR 146: 125*
[Univ. South Fla., Tampa.] Summary: This paper summarizes the historical status of the Brown Pelican in the United States through 1970; presents data on the effects of human disturbance on clutch size and hatching success for a colony on Tarpon Key, St. Petersburg, Florida in 1969 and 1970; and presents data on eggshell thickness and chlorinated hydrocarbon residues, including polychlorinated biphenyls, for 87 eggs collected from four colonies in Florida in 1969 and 1970. Methods of reporting pollutant residues are reviewed and the relationship between PCB's and DDE in samples is noted. The significance of these levels of contamination and attendant eggshell thinning to the Florida Brown Pelican population is discussed.--Courtesy/ Paul A. Stewart.

Southern, William E. USE OF THE CANNON-NET IN RING-BILLED GULL COLONIES. *Inland Bird Banding News* 44(3): 83-93, 2 figs. May-June 1972. *WR 146: 125*

Taylor, Joseph W. PROBABLE BULWER'S PETREL OFF KEY WEST, FLORIDA. *Wilson Bull.* 84(2): 198. June 1972. *WR 146: 125*
[20 Parish Rd., Honeoye Falls, N.Y.] *"Bulweria bulwerii."*--Courtesy/ Paul A. Stewart.

HAWKS & OWLS

Boeker, Erwin L., and Eric B. Bolen. WINTER GOLDEN EAGLE POPULATIONS IN THE SOUTHWEST. *J. Wildl. Manage.* 36(2): 477-484, 2 figs. Apr. 1972. *WR 146: 125*
[Ariz. State Univ., Tempe.] Abstract: Golden eagle *(Aquila chrysaëtos)* populations wintering in portions of Texas and New Mexico were determined by regular aerial censuses from 1964 through 1968. Additional census flights were made in other areas of the Southwest on special occasions. Analyses of the census data do not clearly indicate marked year-to-year trends for eagles wintering in Texas; the populations here seemed relatively small and apparently stable. Within the limits of observability, densities calculated from the aerial

counts indicated that there were seldom more than two eagles per 100 square miles in Texas, but in New Mexico, the midwinter eagle densities were several times greater. Eagle densities varied by month in New Mexico, but no more than 18% of the 28, 50-mile aerial segments had densities of 16 or more eagles per 100 square miles in 1966. Overall, almost 75% of the transect segments had low density ratings. If we assume that eagle densities reflect a potential for livestock depredations, our data indicate that such depredations would be greater in New Mexico than in Texas. Nonetheless, measurements of eagle concentrations along aerial transects suggest that high density populations are rare and that any depredation problems that may occur in either state are local.

Bosselmann, J. UHU-BEOBACHTUNGEN IN DER EIFEL. [EAGLE OWL OBSERVATIONS IN THE EIFEL.] *Ornithol. Mitt.* 23(1): 19-20. Jan. 1971. In German. *WR 146: 126*
[Töpferstrasse 8, Mayen, Germany.] *"Bubo bubo."*

Bosselmann, J. UHU-BEOBACHTUNGEN IN DER EIFEL / FORTSETZUNG UND SCHLUSS. [EAGLE OWL OBSERVATIONS IN THE EIFEL / CONTINUATION AND CONCLUSION.] *Ornithol. Mitt.* 23(2): 39-40. Feb. 1971. In German. *WR 146: 126*
[Töpferstrasse 8, Mayen, Germany.] *"Bubo bubo."*

Brosset, A. QUELQUES OBSERVATIONS DE PRINTEMPS AU CAP BON (TUNISIE). [SOME SPRINGTIME OBSERVATIONS AT CAPE BON (TUNISIA).] *Alauda* 39(3): 223-226. 1971. [From Biol. Abstr. 53(10), 1972. In French.] *WR 146: 126*
[Lab. Ecol. Gen. Mus., 4, Ave. Petit-Chateau, Brunoy, France.] Previous lists of the raptors taken by falconers in Tunisia did not give an exact idea of the numerical ratio of species passing by Cape Bon. Birds caught from the beginning of April to the 10th of May and observed in the hands of the falconers were *Accipiter nisus, Hieraaetus pennatus, P. apivorus, Buteo buteo, Circus macrourus, C. pygargus, B. rufinus rufinus, F. subbuteo, F. vespertinus, F. columbarius, F. tinnunculus, F. naumanni* and *F. eleonorae.*

Brown, J. Clevedon, and G. I. Twigg. MAMMALIAN PREY OF THE BARN OWL *(TITO ALBA)* ON SKOMER ISLAND, PEMBROKESHIRE. *J. Zool.* (London) 165(4): 527-530. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 126*
[Univ. Coll. South Wales, Monmouthshire, Cardiff, Wales.] Analysis of a collection of food pellets of *T. alba* on Skomer Island included *Clethrionomys, Apodemus sylvaticus* and *Sorex araneus.*

Butts, Kenneth O. OBSERVATIONS ON THE ECOLOGY OF BURROWING OWLS IN WESTERN OKLAHOMA. A PRELIMINARY REPORT. *Proc. Okla. Acad. Sci.* 51: 66-74. 1971. *WR 146: 126*
[Okla. Coop. Wildl. Res. Unit, Stillwater.] Methods and preliminary results of research on the ecology of burrowing owls in western Oklahoma are reported. Aspects of research discussed include a census of the adult owl populations, trapping and marking, habitat utilization, production of young, nest ecology, and changes in habitat.--From abstr.

Cheylan, G. LE REGIME DE LA CHOUETTE HULOTTE *(STRIX ALUCO)* A SALERNES (VAR). [THE DIET OF THE OWL *STRIX ALUCO* IN SALERNES (VAR, FRANCE).] *Alauda* 39(2): 150-155, illus. 1971. [From Biol. Abstr. 53(4), 1972. In French.] *WR 146: 126*
[6, Rue de Littera, Alix-en-Province, France.]

Christensen, Steen, Bent Pors Nielsen, R. F. Porter, and Ian Willis. FLIGHT IDENTIFICATION OF EUROPEAN RAPTORS / PART 3. AQUILA AND WHITE-TAILED EAGLES. *British Birds* 65(2): 52-78, 10 figs. + 7 pls. Feb. 1972. *WR 146: 126*
Two genera of eagles, *Aquila* (five species) and *Haliaeetus* (one), are discussed.

Courser, William D. VARIABILITY OF TAIL MOLT IN THE BURROWING OWL. *Wilson Bull.* 84(1): 93-95, 1 fig. Mar. 1972. *WR 146: 126*
[Univ. South Fla., Tampa.] Report of both gradual and simultaneous molting of the tail feathers in *Speotyto cunicularia hypogaea.*--Courtesy/ Paul A. Stewart.

Cranson, Babette F. MISSISSIPPI KITE NESTING IN COLORADO. *Colo. Field Ornithol.* no. 11. p. 5-10, illus. Mar. 1972. *WR 146: 127*
[Otero Jr. Coll., La Junta, Colo.] *"Ictinia mieisippiensis."*

Dell, John. BREEDING OF A LITTLE EAGLE IN THE DARLING RANGE. *West. Australian Nat.* 11(8): 186-187. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 127*
[Kalamunda, Western Australia.] Observations of the behavior of a little eagle *(Hieraaetus morphnoides)* are given for a representative 12 hr period on Oct. 30, 1963.

Dendaletche, Claude. OBSERVATIONS ÉTHOLOGIQUES SUR QUELQUES RAPACES DES PYRÉNÉES BASQUES. [ETHOLOGICAL OBSERVATIONS ON SOME LARGE RAPTORS OF THE BASQUE PYRENEES.] *Cah. Natur.* 26(2): 31-36. 1970. [From Biol. Abstr. 53(12), 1972. In French.] *WR 146: 127*

Diesselhorst, Gerd. ZUR UMWELTVERÄNDERUNG UND ZUM STATUS EINIGER GREIFVÖGEL IN SARDINIEN. [ON ENVIRONMENTAL CHANGE AND THE STATUS OF SOME BIRDS OF PREY IN SARDINIA.] *Ornithol. Mitt.* 23(4): 70-73. Apr. 1971. In German. *WR 146: 127*
[Zool. Staatssammlung, Munich, Germany.]

Dunstan, Thomas C. AN ECOSYSTEM APPROACH TO THE STUDY OF MINNESOTA'S BALD EAGLES. *Loon* 43(4): 109-113, 5 figs. Winter 1971. *WR 146: 127*
[Western Ill. Univ., Macomb.] Summary of the status of research conducted on bald eagles breeding in the state of Minnesota.

Ely, Charles A., and Richard S. Crossin. A NORTHERLY WINTERING RECORD OF THE ELF OWL *(MICRATHENE WHITNEYI).* *Condor* 74(2): 215. Summer 1972. *WR 146: 127*
[Fort Hays Kans. State Coll., Hays.] More than 500 mi. NW of the nearest reported wintering locality.--Courtesy/ Paul A. Stewart.

Erhardt, Tom. ATTEMPTED BREEDING OF THE GOLDEN EAGLE *(AQUILA CHRYSAETOS CANADENSIS)* IN CAPTIVITY. *Raptor Res. News* 5(5&6): 147-149. Sept.-Oct., Nov.-Dec. 1972. *WR 146: 127*
[International Animal Exchange, Inc., 1489 E. Nine Mile Rd., Ferndale, Mich.]

Fiuczynski, Dietrich. DIE ERMITTLUNG DER SIEDLUNGSDICHTE BEIM BAUMFALKEN *(FALCO SUBBUTEO).* [THE INQUIRY INTO THE POPULATION DENSITY OF THE HOBBY *(FALCO SUBBUTEO).*] *Ornithol. Mitt.* 20(12): 249-250. Dec. 1968. In German with English summ. *WR 146: 127*
[Klingorstr. 27, Berlin, Germany.]

Fuchs, Eduard. BESTAND, BIOTOP UND VERBREITUNG DES ROTMILANS *MILVUS MILVUS* IN DER SCHWEIZ. [STATUS, HABITAT, AND DISTRIBUTION OF THE RED KITE *(MILVUS MILVUS)* IN SWITZERLAND.] *Ornithol. Beob.* 67(5/6): 221-230. Dec. 1970. In German with English summ. *WR 146: 127*
[Univ. Basel, Basel, Switzerland.]

Galicz, George, Frank Beebe, John Polson, and Ritchie Jones. AUTUMN EGG PRODUCTION BY CAPTIVE PEREGRINE FALCONS. *Raptor Res. News* 5(5&6): 150-151. Sept.-Oct., Nov.-Dec. 1972. *WR 146: 127*
[Canadian Raptor Soc., 3575 East Georgia St., Vancouver, British Columbia, Canada.]

Garber, David P., and James R. Koplin. PROLONGED AND BISEXUAL INCUBATION BY CALIFORNIA OSPREYS. *Condor* 74(2): 201-202. Summer 1972. *WR 146: 127*
[Six Rivers Natl. Forest, Eureka, Calif.] Reports incubation periods of 38 and 43 days, earlier reported incubation periods being 28 to 33 days. Both sexes shared in incubation.--Courtesy/ Paul A. Stewart.

Gruschka, H. D., I. U. Borchers, and J. G. Coble. AERODYNAMIC NOISE PRODUCED BY A GLIDING OWL. *Nature* 233(5319): 409-411, 5 figs. 8 Oct. 1971. *WR 146: 128*
[Univ. Tenn. Space Inst., Tullahoma.]

Haas, Gerhard. ZUR WIEDEREINBUERGERUNG DES UHUS *(BUBO BUBO)* IN BADEN-WUERTTEMBERG. [THE INTRODUCTION OF THE EAGLE OWL *(BUBO BUBO)* IN BADEN-WUERTTEMBERG.] *Jahresh. Ges. Naturkd. Wuerttemb.* 125: 265-275, illus. 1970. [From Biol. Abstr. 53(10), 1972. In German.] *WR 146: 128*
The eagle owl disappeared from Baden-Wuerttemberg as a breeding species in 1945 because its protection introduced in 1925 came too late. In 1956 a pair imported from a bird sanctuary yielded a progeny of 23 of which 10 survived. In 1963, 4 breeding pairs were located in old breeding places. The population in 1970 is estimated to be a dozen birds. Strict protection measures are needed to insure the birds' survival. Bird sanctuaries should be established where owls breed, more owls should be imported at public expense, and the location of the breeding sites should not be publicized.

Hamerstrom, Frances. AGEING RED-TAILED HAWKS BY TAIL COLOR IN WISCONSIN. *Inland Bird Banding News* 43(1): 9-11, 1 fig. Jan.-Feb. 1971. *WR 146: 128*
[Plainfield, Wis.] Courtesy/ Paul A. Stewart.

Heintzelman, Donald S., and Robert MacClay. THE 1970 AND 1971 AUTUMN HAWK COUNTS AT BAKE OVEN KNOB, PENNSYLVANIA. *Cassinia* 53: 3-23. 1971-1972. *WR 146: 128*
[N.J. Mus., Trenton.]

Homei, V., and Alexandrina Popescu. CONTRIBUTII LA STUDIUL HRANEI DE IARNĂ A CIUFILOR *(ASIO OTUS OTUS* L.*)* DIN ZONA INUNDABILĂ A DUNĂRII. [CONTRIBUTION TO THE STUDY OF WINTER FEEDING OF THE LONG-EARED OWL *(ASIO OTUS OTUS)* IN THE FLOOD-PLAIN OF THE DANUBE.] *Ocrotirea Naturii* 13(1): 63-67, 1 fig. 1969. In Romanian with French summ. *WR 146: 128*

Hyndman, Cecil C., and Adele S. Hyndman. THE SHELL PIGMENT OF GOLDEN EAGLE EGGS. *Condor* 74(2): 200-201. Summer 1972. *WR 146: 128*
[Featherland Bird Res. Farm, 1848 Burnside Rd. W., R.R. 3, Victoria, British Columbia, Canada.] "We conclude that the reddish deposits typical of the golden eagle egg shell are in fact blood proper from hemorrhage, not the secretion of pigment glands."

Kaus, Dieter, Helmut Link, and Joachim Werzinger. BEMERKUNGEN ZUM BESTAND DER SCHLEIEREULE *(TYTO ALBA)* IN EINIGEN TEILEN FRANKENS. [REMARKS ON THE STAND OF THE BARN OWL *(TYTO ALBA)* IN SOME PARTS OF FRANCONIA.] *Anz. Ornithol. Ges. Bayern* 10(2): 69-82. 1971. [From Biol. Abstr. 53(4), 1972. In German with English summ.] *WR 146: 128*
[Steingruberst. 10, Huernberg, Germany.]

Lawson, Phillip T., and Earl L. Kittle. SEX DETERMINATION IN BIRDS OF PREY BY LAPAROTOMY. *Raptor Res. News* 5(4): 132-135. July-Aug. 1971. *WR 146: 128*
[Ohio State Univ., Columbus.]

Lejeune, John J. A PILOT PROJECT TO INCREASE THE REPRODUCTIVITY OF PEREGRINE FALCONS IN THE WILD BY ARTIFICIAL MEANS. *Raptor Res. News* 5(5&6): 168-171. Sept.-Oct., Nov.-Dec. 1972. *WR 146: 128*
[Peregrine Park, Hope, British Columbia, Canada.]

Martin, Dennis J. UNIQUE BURROWING OWL PELLETS. *Bird-Banding* 42(4): 298-299, 1 fig. Oct. 1971. *WR 146: 128*
[Utah State Univ., Logan.] A pellet of a burrowing owl *(Speotyto cunicularia)* contained pieces of glass and stone.--Courtesy/ Paul A. Stewart.

Mathisen, John. THE STATUS OF OSPREYS ON THE CHIPPEWA NATIONAL FOREST. *Loon* 44(1): 7-9. Spring 1972. *WR 146: 129*
[1001 Miles St., Bemidji, Minn.] Approximately 100 breeding pairs are accounted for on Chippewa National Forest in Minnesota.

Meijer, R., and G. Den Uil. DE WINTERBIOTOOP VAN DE BUIZERD *BUTEO BUTEO*. [THE HABITAT OF THE COMMON BUZZARD *BUTEO BUTEO* IN WINTER.] *Limosa* 44(1/2): 45-53. 1971. [From Biol. Abstr. 53(3), 1972. In Dutch with English summ.] *WR 146: 129*
[Woonark "Aythya," Rivierdijk 2a, Sliedrecht, Netherlands.]

Mikkola, Heimo. URALKAUZ ODER BARTKAUZ? [URAL OWL OR GREAT GRAY OWL?] *Ornithol. Mitt.* 23(2): 40-41, illus. Feb. 1971. In German. *WR 146: 129*
[Univ. Oulu, Oulu, Finland.] Tabulation of differences between *Strix uralensis* and *Strix nebulosa*.

Moffatt, Ruth E. NATURAL POX INFECTION IN A GOLDEN EAGLE. *J. Wildl. Dis.* 8 (2): 161-162, 1 fig. Apr. 1972. *WR 146: 129*
[Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada.] Abstract: A naturally occurring case of pox infection was identified in a Golden Eagle *(Aquila chrysaetos)* from the Prince George area of British Columbia. Gross and microscopic findings are described. This is apparently the first record of pox infection in the Golden Eagle.

Mueller, Helmut C. ZONE-TAILED HAWK AND TURKEY VULTURE: MIMICRY OR AERODYNAMICS? *Condor* 74(2): 221-222. Summer 1972. *WR 146: 129*
[Univ. N.C., Chapel Hill.] The aerodynamics of soaring flight is discussed and it is concluded that similarities of zone-tailed hawk *(Buteo albonotatus)* and turkey vulture *(Cathartes aura)* are associated with aerodynamics rather than aggressive mimicry.--Courtesy/ Paul A. Stewart.

Newton, I. BIRDS OF PREY IN SCOTLAND: SOME CONSERVATION PROBLEMS. *Scottish Birds* 7(1): 5-23, 4 figs. + 4 pls. Spring 1972. *WR 146: 129*
Golden eagle, hen harrier, buzzard, kite and osprey owe their present limited ranges in Britain to past persecution, but other species in recent years have been restricted by other factors: marsh harrier, honey buzzard and goshawk by extreme shortage of habitat (though the last could now benefit from increased afforestation); peregrine and sparrowhawk by certain pesticides; and merlin, hobby and Montagu's harrier by unknown factors. Only kestrel is about as numerous and widespread as expected, though still sparse in some arable areas.--From summ.

Nicholls, Thomas H., and Dwain W. Warner. BARRED OWL HABITAT USE AS DETERMINED BY RADIOTELEMETRY. *J. Wildl. Manage.* 36(2): 213-224, 7 figs. Apr. 1972. *WR 146: 129*
[North Central Forest Exp. Sta., St. Paul, Minn.] Abstract: Radio transmitters were successfully placed on 10 barred owls *(Strix varia)* during 1965-66, and the movements of the owls were followed with an automatic radio-tracking system for a total of 1,182 days. More than 28,000 owl locations were sampled from some two million locations recorded. These locations, along with habitat availability information, were programmed for computer analysis to determine intensity of habitat use. Barred owls showed consistent and highly significant preference or avoidance for different habitats despite changing seasons, phenology, weather conditions, and years. The order of habitat preference in decreasing intensity of use was oak *(Quercus* spp.*)* woods, mixed hardwoods and conifers, white cedar *(Thuja occidentalis)* swamps, oak-savannas, alder *(Alnus* spp.*)* swamps, marshes, and open fields.

Page, Gary, and David Whitacre. HAWKS, OWLS, AND SHOREBIRDS ON BOLINAS LAGOON. *Point Reyes Bird Observatory Newsletter* no. 22. p. 5-8, 1 fig. June 1972. *WR 146: 129*
The short-eared owl's diet consisted of 52.1% birds and 47.9% mammals.

Pasanen, Seppo, and Seppo Sulkava. ON THE NUTRITIONAL BIOLOGY OF THE ROUGH-LEGGED BUZZARD, *BUTEO LAGOPUS LAGOPUS* BRÜNN., IN FINNISH LAPLAND. *Aquilo Ser. Zool.* 12: 53-63, 8 figs. 1971. *WR 146: 130*

[Univ. Oulu, Oulu, Finland.] The nutritional biology of the rough-legged buzzard was studied on breeding grounds in the northern part of the parish of Kittilä, Finnish Lapland in 1963-67. The food composition was studied from prey animal remains and pellets, and by direct observation. The pellets of young rough-legged buzzards are poor food indicators, for they contain few bones (2-4%) and are not found until the end of the nestling period. Pellets of adult birds are better for food determination (bone content about 20%). The rough-legged buzzard hunts 15-18 hours daily, obtaining 60% of its prey from open bogs. The hunting area was 5-7 km^2 during the hatching period and about 10 km^2 during the nestling period. The food mostly contains 80-90% small mammals and 10-20% birds, but in 1966 the proportion of birds was about 70%.--From abstr.

Pennycuick, C. J. GLIDING FLIGHT OF THE WHITE-BACK VULTURE *GYPS AFRICANUS*. *J. Exp. Biol.* 55(1): 13-38. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 130*

[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.] A glide polar was constructed for the African white-backed vulture on the basis of comparative glide measurements against a Schleicher ASK-14 powered sailplane, supplemented by other observations. The minimum sinking speed was estimated to be 0.76 m/sec at a forward speed of 10 m/sec, and the best glide ratio 15.3:1 at 13 m/sec. The minimum circling radius at 35° bank is about 14 m. Alteration of the body form to be similar to the wandering albatross would impair climbing performance at radii below 17 m, but would improve it at larger radii, and would greatly increase average cross-country speed in thermals. It is concluded that the low-aspect-ratio wings of vultures and storks are probably adapted to take-off and landing requirements, and not to thermal soaring as such.

Platt, Joseph B. A SURVEY OF NESTING HAWKS, EAGLES, FALCONS, AND OWLS IN CURLEW VALLEY, UTAH. *Great Basin Nat.* 31(2): 51-65, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 130*

[Brigham Young Univ., Provo, Utah.] Prey, nest site selections, and productivity were determined in a study of 45 nests of 11 spp. in summer of 1969. Observations on 6 other spp. are included. Nesting failure was 20%. Impact on the environment was slight, but the environment limited the bird population. Only the golden eagle failed to produce a replacement population, but this was true only in the valley studied.

Purdue, James R., Charles C. Carpenter, Dale L. Marcellini, and Robert F. Clarke. SPRING MIGRATION OF SWAINSON'S HAWK AND TURKEY VULTURE THROUGH VERACRUZ, MEXICO. *Wilson Bull.* 84(1): 92-93. Mar. 1972. *WR 146: 130*

[Univ. Okla., Norman.] *"Buteo swainsoni* and *Cathartes aura."*--Courtesy/ Paul A. Stewart.

Reynolds, Richard T. SEXUAL DIMORPHISM IN *ACCIPITER* HAWKS: A NEW HYPOTHESIS. *Condor* 74(2): 191-197, 1 fig. Summer 1972. *WR 146: 130*

[Oreg. State Univ., Corvallis.] A new hypothesis is suggested which is based on selection for increasing the hunting efficiency of the male *Accipiter* hawk to better feed himself, the female, and the young through a large portion of the breeding season. Since there are greater numbers of species and individuals of smaller avian prey (Eltonian pyramid of numbers), a decrease in size would result in an increase of encounters of optimal, accessible prey. If a smaller male encounters more optimal, accessible prey, and has reduced metabolic needs, then his efficiency at procuring excess food more frequently and at more regular intervals is enhanced.--From summ. Courtesy/ Paul A. Stewart.

Robel, Detlef. BEOBACHTUNGEN AM ROTFUSSFALKEN *(FALCO VESPERTINUS)* BEI FRANKFURT/ODER. [OBSERVATIONS UPON THE RED-FOOTED FALCON *(FALCO VESPERTINUS)* AT FRANKFURT/ODER.] *Ornithol. Mitt.* 23(7-8): 149. July-Aug. 1971. In German. *WR 146: 130*

[Thälmannstrasse 23, Cottbus, Germany.]

Rusch, Donald H., E. Charles Meslow, Phillip D. Doerr, and Lloyd B. Keith. RESPONSE OF GREAT HORNED OWL POPULATIONS TO CHANGING PREY DENSITIES. *J. Wildl. Manage.* 36(2): 282-296, 9 figs. Apr. 1972. *WR 146: 131*

[Univ. Wis., Madison.] Abstract: From 1966 through 1969, we measured the numbers, productivity, and food habits of great horned owls *(Bubo virginianus)* on an area of 62 square miles near Rochester, Alberta. During these years, there were sevenfold, twofold, and threefold increases in the numbers of snowshoe hares *(Lepus americanus)*, ruffed grouse *(Bonasa umbellus)*, and sharp-tailed grouse *(Pediocoetes phasianellus)*, respectively. The owls responded to these changes in numbers of prey by an increase in numbers from 10 to 18, by an increase from 20 to 100% in the proportion nesting, and by an increase in the percentage of snowshoe hare biomass in the diet from 23% in 1966 to 50% in 1969. The proportion of sharp-tailed grouse in the owl diet also increased from none in 1966 to 10% in 1968 but decreased to 3% in 1969. The proportion of ruffed grouse in the diet decreased each year, from 23% in 1966 to none in 1969. The diets of owl families were related to the vegetative cover surrounding the nests and presumably to the composition of the prey base. Snowshoe hares, waterfowl, and pocket gophers *(Thomomys talpoides)* were the principal components of the owl diet. The quantitative impact of owl predation on spring populations of snowshoe hares and ruffed grouse appeared to be low (between 0 and 7%). Although 60% of the hares alive in spring were young-of-the-year, 97% of the hares in the owl diet were adults. Similarly, only 3 of 26 grouse in the owl diet were females, despite balanced sex ratios in the spring grouse populations. The continued increase in numbers of snowshoe hares coincided with decreased predation rates on ruffed grouse and decreased incidence of sharp-tailed grouse in the owl diet, as owls consumed relatively more snowshoe hares.

Rust, Rudolf. POPULATIONSDYNAMISCHE UNTERSUCHUNGEN AM HABICHTSBESTAND *(ACCIPITER GENTILIS)* EINES OBERBAYERISCHEN UND SCHWAEBISCHEN GEBIETES. [STUDIES ON THE DYNAMICS OF A GOSHAWK POPULATION *(ACCIPITER GENTILIS)* IN AN UPPER BAVARIAN AND SCHWABIAN AREA (GERMANY).] *Ans. Ornithol. Ges. Bayern* 10(2): 83-91, illus. 1971. [From Biol. Abstr. 53(4), 1972. In German with English summ.] *WR 146: 131*

[Markt Oberdorfer St. 36, Altdorf, Germany.]

Sagitov, A. K., and S. B. Bakaev. [NESTING HABITS OF *FALCO TINNUNCULUS TINNUNCULUS* L. IN THE LOWER ZARAFSHAN.] *Vestn. Zool.* 5(4): 51-57. 1971. [From Biol. Abstr. 53(9), 1972. In Russian with English summ.] *WR 146: 131*

[Samark. State Univ., Samarkand, USSR.]

Schaefer, Helmut. BEUTETIERE DES UHUS *BUBO BUBO* AUS KARPATEN UND LAPPLAND. [THE PREY OF THE *BUBO BUBO* OWL FROM THE CARPATHIANS AND FROM LAPLAND.] *Bonn. Zool. Beitr.* 22(1/2): 153-160, illus. 1971. [From Biol. Abstr. 53(6), 1972. In German.] *WR 146: 131*

[Im Klaefberg 22, 5062 Hoffmungsthal, Germany.] The food remnants identified at the nesting place of a pair of *B. bubo* owls on a rocky promontory in the High Tatra mountains at an elevation of 1000 m consisted of 63% of small mammals, 30% frogs and 6% birds. Numerically, the field mouse was most common (32%) followed by the grass frog (30%) and the rat *Arvicola terrestris* (25%). These 3 spp. thus formed 87% of the owl's food intake. Altogether 1112 animals were counted but the time span is not known. Among food remnants in two nests of owls nesting in Lapland north of Gantosjoe, 101 vertebrates belonging to 19 spp. were identified, a much richer diet than that of the Carpathian owls. The remnants contained mostly bones of chickens, ducks, owls, and birds of prey.

Scherzinger, Wolfgang. BEOBACHTUNGEN ZUR JUGENDENTWICKLUNG EINIGER EULEN (STRIGIDAE). [OBSERVATIONS ON THE DEVELOPMENT OF THE YOUNG OF SOME OWLS (STRIGIDAE).] *Z. Tierpsychol.* 28(5): 494-504, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 131*

[Doeblinger Haupst. 57, Vienna, Austria.]

Smith, Charles R., and Milo E. Richmond. FACTORS INFLUENCING PELLET EGESTION AND GASTRIC pH IN THE BARN OWL. *Wilson Bull.* 84(2): 179-186, 3 figs. June 1972. *WR 146: 132*

[Cornell Univ., Ithaca, N.Y.] The pH of the gastric contents in the barn owl, *Tyto alba*, changes according to a regular pattern from feeding until pellet egestion, but it could not be implicated definitely as a mechanism that triggers actual egestion. Data on gastric pH demonstrate the presence of a cephalic phase of digestion. The pellet is formed in the gizzard within six hours after a meal, and is passed into the proventriculus where it is held until egestion. The intervals at which pellets are egested is dependent on quantity of food eaten, time of feeding, and availability of more food.--Courtesy/ Paul A. Stewart.

Smith, Dwight G., and Charles R. Wilson. NOTES ON THE WINTER FOOD OF SCREECH OWLS IN CENTRAL UTAH. *Great Basin Nat.* 31(2): 83-84. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 132*

[Southern Conn. State Coll., New Haven.] Analysis of 67 pellets disclosed eight prey items of which the house sparrow was most important. The screech owl is described as an opportunistic predator.

Smith, Dwight G., Charles R. Wilson, and Herbert H. Frost. THE BIOLOGY OF THE AMERICAN KESTREL IN CENTRAL UTAH. *Southwest Nat.* 17(1): 73-83, 1 fig. May 1972. *WR 146: 132*

[Southern Conn. State Coll., New Haven.] Abstract: Observations were made on the ecology of American kestrels, *Falco sparverius*, in central Utah from 1967-1970. Information presented includes observations on their habitat requirements, populations, nesting activities, productivity, care and feeding of young and food habits.

Sparrowe, Rollin DeMers. PREY-CATCHING BEHAVIOR IN THE SPARROW HAWK. *J. Wildl. Manage.* 36(2): 297-308, 4 figs. Apr. 1972. *WR 146: 132*

[Mich. State Univ., East Lansing.] Three hand-reared and 12 wild-trapped sparrow hawks *(Falco sparverius)* were trained through a reward system to catch a mouselike model. The duration of prey exposure affected the number of attempts made and the percentage of successful captures more than prey contrast or cover density. A combination of dense cover and low prey contrast resulted in a reduced number of attempts and successes. Factors such as dense cover and low prey contrast, which determine if an attempt is made to capture a prey, control the relative amount of exposure of the prey item to the hawk by obscuring the prey or making it less conspicuous. The length of time the prey is exposed to the hawk controls whether an attack is started, whether it is carried through, and whether a capture is made.--From abstr.

Stocek, R. F. THE OCCURRENCE OF OSPREY ON ELECTRIC POWER LINES IN NEW BRUNSWICK. *New Brunswick Nat.* 3(2): 19-27, 4 figs. Mar. 1972. *WR 146: 132*

[Maritime Forest Ranger School, P.O. Box 518, Fredericton, New Brunswick, Canada.] Aerial reconnaissance of New Brunswick electric power lines from 1957 to 1971 showed that osprey were active on only nine of these. Most were found in the southern half of the province and in the vicinity of large bodies of water.--From summ.

Temple, Stanley A. SYSTEMATICS AND EVOLUTION OF THE NORTH AMERICAN MERLINS. *Auk* 89(2): 325-338, 3 figs. Apr. 1972. *WR 146: 132*

[Cornell Univ., Ithaca, N.Y.] Courtesy/ Paul A. Stewart.

Thacker, Roger. ESTIMATIONS RELATIVE TO BIRDS OF PREY IN CAPTIVITY IN THE UNITED STATES OF AMERICA. *Raptor Res. News* 5(4): 108-122. July-Aug. 1971. *WR 146: 132*

[Ohio State Univ., Columbus.] A series of surveys has been carried out to gather estimations of birds of prey in captivity in the United States of America. These surveys have included zoological, research, falconry, and importation sources. Replies indicate that there could well be a total of between 4,600/ 5,800 such birds being utilized or held for various reasons. The former figure

of 4,600 is taken from this survey including approximately 1,000 birds imported for what is felt to be the pet trade, while the latter figure is an expanded 100% replies from this survey plus approximately 1,000 birds imported for the pet trade.--From concl.

Ward, F. Prescott, and Robert B. Berry. AUTUMN MIGRATIONS OF PEREGRINE FALCONS ON ASSATEAGUE ISLAND, 1970-71. *J. Wildl. Manage.* 36(2): 484-492, 2 figs. Apr. 1972. *WR 146: 133*

[Biomedical Lab., Edgewood Arsenal, Md.] Abstract: In 1970 and 1971, the autumn migrations of peregrine falcons *(Falco peregrinus tundrius)* were studied on Assateague Island in Maryland and Virginia. During a 22-day observation period in 1970, 68 peregrines were sighted and 28 were trapped, but 5 were recaptures of falcons banded earlier in the survey. In 1971, 120 peregrines were sighted in 16 days; 35 were banded and 10 were recaptured, some several times. Of the falcons banded, immature birds comprised 87% and 89%, respectively, of the samples in 1970 and 1971. Of the falcons sighted that could be positively identified, 85% in 1970 and 91% in 1971 were immatures. These data, when compared with other records kept intermittently since 1939, suggest that the abundance of peregrine falcons in 1970 and 1971 was probably not different from that of recent years. Age ratios of the sighted and trapped birds, reported to be the best indicators of the reproductive success of the population, corresponded favorably with all previous records. However, comparisons of peregrine sightings in 1970 and 1971 with those recorded by a single observer between 1939 and 1947 suggest that a significant population reduction occurred after 1947.

Ward, F. Prescott, and David G. Fairchild. AIR SAC PARASITES OF THE GENUS *SERRATOSPICULUM* IN FALCONS. *J. Wildl. Dis.* 8(2): 165-168, 1 fig. Apr. 1972. *WR 146: 133*

[Biomedical Lab., Edgewood Arsenal, Md.] Abstract: Nematodes of the genus *Serratospiculum* are common and usually innocuous inhabitants of the air sacs of several species of falcons. However, the abdominal and thoracic air sacs of a prairie falcon *(Falco mexicanus)* that died in respiratory distress were filled with hundreds of adult parasites. Illnesses in a peregrine *(Falco peregrinus tundrius)* and another prairie falcon, tentatively diagnosed as serratospiculiasis, were successfully treated with thiabendazole given orally. Embryonated ova were found in the feces of 8 of 73 falcons representing five species.

Watson, A. D., and R. C. Dickson. COMMUNAL ROOSTING OF HEN HARRIERS IN SOUTHWEST SCOTLAND. *Scottish Birds* 7(1): 24-49, 2 figs. Spring 1972. *WR 146: 133*

Between 1966 and 1971 communal winter roosting of hen harriers was studied at two places in southwest Scotland 35 miles apart. Here the roosting grounds are described, and the reasons for fluctuation of the numbers present and of the ratio of adult males to ringtails are considered. The effect of weather on the numbers using one of the roosts is described. Arrival at and departure from the roosts are described, and behavior at the roosts is discussed. Information on winter food of hen harriers in the region is given from analysis of pellets found at the roosts. Diurnal distribution is considered in regard to dispersal from the roosts to hunting areas.--From summ.

Wilbur, Sanford R., and John C. Borneman. COPULATION BY CALIFORNIA CONDORS. *Auk* 89(2): 444-445. Apr. 1972. *WR 146: 133*

[Patuxent Wildl. Res. Cent., Ojai, Calif.] *"Gymnogype californianus."*--Courtesy/ Paul A. Stewart.

Wille, Hans-Günter. ERGEBNISSE EINER MEHRJÄHRIGEN STUDIE AN EINER POPULATION DES WALDKAUZES *(STRIX ALUCO)* IN WEST-BERLIN. [RESULTS OF AN EXTENDED STUDY OF A POPULATION OF THE TAWNY OWL *(STRIX ALUCO)* IN WEST BERLIN.] *Ornithol. Mitt.* 24 (1): 3-7. Jan. 1972. In German. *WR 146: 133*

[Petersallee 4, Berlin, Germany.]

Wolhuter, Bruce R. SPARROW HAWK PREDATION ON A MEADOWLARK. *Bird-Banding* 42 (3): 221. July 1971. *WR 146: 134*

[5109 Williams Fork Trail, Apt. 110, Boulder, Colo.] A sparrow hawk *(Falco sparverius)* was found killing a western meadowlark *(Sturnella neglecta)*.--Courtesy/ Paul A. Stewart.

BLACKBIRDS, STARLINGS, CROWS

Balda, Russell P., Gary C. Bateman, and Gene F. Foster. FLOCKING ASSOCIATES OF THE PIÑON JAY. *Wilson Bull.* 84(1): 60-76. Mar. 1972. *WR 146: 134*

[Northern Ariz. Univ., Flagstaff.] The hairy woodpecker *(Dendrocopos villosus)*, downy woodpecker *(D. pubescens)*, red-shafted flicker *(Colaptes cafer)*, Clarke's nutcracker *(Nucifraga columbiana)*, and starling *(Sturnus vulgaris)* were observed to form interspecific flocks with the highly gregarious piñon jay *(Gymnorhinus cyanocephalus)*.--Courtesy/ Paul A. Stewart.

Bartel, Karl E. COMMON GRACKLE NEST BANDING DOWN IN 1971. *Inland Bird Banding News* 43(4): 102-106. July-Aug. 1971. *WR 146: 134*

"Quiscalus quiscula."

Burtt, Harold E., and Maurice L. Giltz. COMPARATIVE BLACKBIRD POPULATIONS AT TWO BANDING STATIONS. *Inland Bird Banding News* 43(1): 3-5. Jan.-Feb. 1971. *WR 146: 134*

[Ohio State Univ., Columbus.] Courtesy/ Paul A. Stewart.

Burtt, Harold E., and Maurice L. Giltz. RED-WINGED BLACKBIRDS WINTERING IN A DECOY TRAP. *Bird-Banding* 42(4): 287-289, 1 fig. Oct. 1971. *WR 146: 134*

[Ohio State Univ., Columbus.] In the three-month period, December through February, 25 red-winged blackbirds *(Agelaius phoeniceus)* accounted for 744 repeats. One bird repeated 54 times, and one was captured on 19 consecutive days.--Courtesy/ Paul A. Stewart.

Coleman, J. D. THE DISTRIBUTION, NUMBERS, AND FOOD OF THE ROOK *CORVUS FRUGILEGUS FRUGILEGUS* L. IN CANTERBURY, NEW ZEALAND. *New Zealand J. Sci.* 14 (3): 494-506, illus. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 134*

[Univ. Canterbury, Canterbury, New Zealand.] Rook numbers in Canterbury have decreased from approximately 11,000 in 1956 to 700 in 1967 following extensive poisonings, and 2 roosts and 16 rookeries have been deserted.

Cruz, Alexander. FOOD AND FEEDING BEHAVIOR OF THE JAMAICAN CROW, *CORVUS JAMAICENSIS*. *Auk* 89(2): 445-446. Apr. 1972. *WR 146: 134*

[Univ. Fla., Gainesville.]

Davis, Charles A., and James P. Griffing. NESTING OF THE WHITE-NECKED RAVEN IN SOUTHEASTERN NEW MEXICO. *N. Mex. State Univ. Agr. Exp. Sta. Res. Rep.* 231. p. 1-5. May 1972. *WR 146: 134*

[N. Mex. State Univ., Las Cruces.] Raven nests were found mostly in taller mesquite bushes and at an average of seven feet above ground. Average clutch size was 4.7 eggs. Incubation period was estimated to be 20 to 22 days. Of all eggs laid, 63% hatched and 38% resulted in fledged birds.--From summ.

DeHaven, Richard W., Joseph L. Guarino, Frederick T. Crase, and Edward W. Schafer, Jr. METHIOCARB FOR REPELLING BLACKBIRDS FROM RIPENING RICE. *Int. Rice Comm. Newsletter* 22(4): 25-30. Dec. 1971. *WR 146: 134*

[Denver Wildl. Res. Cent., Davis, Calif.] Tests were conducted at Davis, California, during the fall of 1970 to determine the effectiveness of the experimental bird repellent, methiocarb [4-(methylthio)-3,5-xylyl *N*-methylcarbamate], for reducing damage to ripening rice by red-winged and tricolored blackbirds *(Agelaius phoeniceus* and *A. tricolor)*. In a small-scale field test at Biggs, California, a 10.0 lb/acre methiocarb treatment reduced blackbird damage to ripening field rice by about 50%.--From abstr.

Fraga, Rosendo M. COOPERATIVE BREEDING AND A CASE OF SUCCESSIVE POLYANDRY IN THE BAY-WINGED COWBIRD. *Auk* 89(2): 447-449. Apr. 1972. *WR 146: 135*
[Callas 1502, Buenos Aires, Argentina.] Unmated male bay-winged cowbirds *(Molothrus badius)* aided in feeding nestlings of their own species and in protecting the nests. All of the breeding pairs in one area had such helpers.--Courtesy/ Paul A. Stewart.

Kalchreuter, H. UNTERSUCHUNGEN AN DER KRAEHENMASSENFALLE. [INVESTIGATIONS ABOUT MASS-TRAPPING OF CROWS.] *Z. Jagdwiss.* 17(1): 13-19, illus. 1971. [From Biol. Abstr. 53(6), 1972. In German with English and French summ.] *WR 146: 135*
"Corvus frugilegus and *C. corone."*

Khan, R. A., and A. M. Fallis. SPECIATION, TRANSMISSION, AND SCHIZOGONY OF LEUCOCYTOZOON IN CORVID BIRDS. *Canadian J. Zool.* 49(10): 1363-1367, illus. 1971. [From Biol. Abstr. 53(8), 1972. In English with French summ.] *WR 146: 135*
[Univ. Newfoundland, St. John's, Newfoundland, Canada.] *"Corvus corax, C. brachyrhynchos* and *Cyanocitta cristata."*

Maxwell, George R. II, and Loren S. Putnam. INCUBATION, CARE OF YOUNG, AND NEST SUCCESS OF THE COMMON GRACKLE *(QUISCALUS QUISCULA)* IN NORTHERN OHIO. *Auk* 89(2): 349-359, 4 figs. Apr. 1972. *WR 146: 135*
[State Univ. N.Y. Coll., Oswego.] Information is given on incubation, brooding, feeding young, nest maintenance, and nesting success.--Courtesy/ Paul A. Stewart.

McGeen, Daniel S. COWBIRD-HOST RELATIONSHIPS. *Auk* 89(2): 360-380, 4 figs. Apr. 1972. *WR 146: 135*
[Oakland Univ., Rochester, Mich.] Two factors determine fledging success of the cowbird, *Molothrus ater*, first choice of host, and second parasite pressure via density with reference to host numbers.--Courtesy/ Paul A. Stewart.

Mitterling, Lloyd A. CROP MYCOSIS OF HAND-RAISED BLUE JAY FLEDGLINGS CURED BY TREATMENT WITH MILK OF MAGNESIA. *Bird-Banding* 42(4): 299-300. Oct. 1971. *WR 146: 135*
[Univ. Conn., Storrs.] *"Cyanocitta cristata."*--Courtesy/ Paul A. Stewart.

Prevett, J. P. GRACKLES RETRIEVE DEAD SMELT FROM LAKE ERIE. *Canadian Field Nat.* 86(2): 163-164. Apr.-June 1972. *WR 146: 135*
[Univ. Western Ontario, London, Ontario, Canada.] *"Quiscalus quiscula* and *Osmerus mordax."*

Royall, W. C., Jr., J. L. Guarino, A. Zajanc, and C. C. Siebe. MOVEMENTS OF STARLINGS BANDED IN CALIFORNIA. *Bird-Banding* 43(1): 26-37, 9 figs. Jan. 1972. *WR 146: 135*
[Wildl. Res. Cent., Denver, Colo.] Fall migration of starlings *(Sturnus vulgaris)* started in late October; spring migration extended from early February to mid-March. Many banded starlings return to California in successive winters, but a few remained north of the state in later years according to recovery data. There was some migration northeastward and southwestward across the mountains.--Courtesy/ Paul A. Stewart.

Smith, Douglas G. THE ROLE OF THE EPAULETS IN THE RED-WINGED BLACKBIRD, *(AGELAIUS PHOENICEUS)* SOCIAL SYSTEM. *Behaviour* 41(3-4): 251-268, 4 figs. 1972. In English with German summ. *WR 146: 135*
[State Univ. N.Y., Stony Brook.] Summary: The role of the epaulets of the male Red-winged blackbird, *Agelaius phoeniceus*, was examined. Territorial male Red-wings were captured and their epaulets blackened with Nyanzol D, a permanent black dye. The following results were obtained: 1) Sixty-four percent of the males with black epaulets lost their territories while only eight percent of the control males lost theirs. 2) Males with epaulets blackened prior to pair

formation were still able to "attract" females and mate successfully. It was concluded that the epaulets communicate threat between rival males but that they have little if any role in intersexual encounters. The epaulets, therefore, have probably evolved in response to intrasexual (epigamic) selection pressure.

Stanley, Janet G., and Francis C. Rabalais. HELMINTH PARASITES OF THE RED-WINGED BLACKBIRD, *AGELAIUS PHOENICEUS*, AND COMMON GRACKLE, *QUISCALUS QUISCULA*, IN NORTHWESTERN OHIO. *Ohio J. Sci.* 71(5): 302-303. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 136*
[Bowling Green State Univ., Bowling Green, Ohio.]

Stewart, Paul A. CHANGE OF WINTER FEEDING SITES BY INDIVIDUAL BROWN-HEADED COWBIRDS. *Condor* 74(2): 204. Summer 1972. *WR 146: 136*
[USDA, Entomol. Res. Div., Oxford, N.C.] Brown-headed cowbirds *(Molothrus ater)* used feeding sites more distant from their roost when food was still available at sites earlier used nearer the roost.

Taylor, Walter Kingsley. MOBBING OF A FISH CROW BY PASSERINES. *Wilson Bull.* 84(1): 98. Mar. 1972. *WR 146: 136*
[Fla. Tech. Univ., Orlando.] An unidentified nestling was obtained by a fish crow *(Corvus ossifragus)* in spite of mobbing actions of several species.--Courtesy/ Paul A. Stewart.

Thiede, Walther, and Ulrike Thiede. ZUR BRUTBIOLOGIE DES ROSTBACKENSTARS. [ON THE BREEDING BIOLOGY OF THE RUST BACKED STARLING.] *Bonn. Zool. Beitr.* 22 (3/4): 261-274, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German.] *WR 146: 136*
[P.O. Box Kobe Port 400, Kobe, Japan.] Observations were made at 6 forest nests of *Sturnus philippensis* from June 15 to July 4, 1970 in northeast Hokkaido, Japan.

Tomich, P. Quentin. NOTES ON NESTS AND BEHAVIOR OF THE HAWAIIAN CROW. *Pac. Sci.* 25(4): 465-474. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 136*
[State Dep. Health, Honokaa, Hawaii.] Nests, nest construction, eggs, incubation behavior, voice, feeding habits and responses to man of the Hawaiian crow *(Corvus tropicus* Gmelin*)* are described. This bird is an endangered species with a range restricted to the island of Hawaii.

OTHER BIRDS

Allsopp, E. M. P. VEERY IN CORNWALL: A SPECIES NEW TO BRITAIN AND IRELAND. *British Birds* 65(2): 45-49, 2 figs. + 1 pl. Feb. 1972. *WR 146: 136*
[81 Uplands Rd., Oadby, Leicester, England.] *"Catharus fuscescens."*

Biber, Olivier. CONTRIBUTION À LA BIOLOGIE DE REPRODUCTION ET À L'ALIMENTATION DU GUÊPIER D'EUROPE *MEROPS APIASTER* EN CAMARGUE. [CONTRIBUTION TO THE BIOLOGY OF REPRODUCTION AND DIET OF THE EUROPEAN BEE-EATER *MEROPS APIASTER* IN THE CAMARGUE REGION (FRANCE).] *Alauda* 39(3): 209-212. 1971. [From Biol. Abstr. 53(10), 1972. In French.] *WR 146: 136*
[Stn. Biol. Tour du Valat, Le Sambuc, France.]

Binkley, Sue Ann. THE PINEAL ORGAN AND CIRCADIAN ORGANIZATION IN THE HOUSE SPARROW. *Ph.D. thesis, Univ. Tex.* (Austin). 178 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 136*
"Passer domesticus."

Blake, Charles H. PRIMARY MOLT IN JUVENILE CARDINALS. *Bird-Banding* 42(4): 269-274, 3 figs. Oct. 1971. *WR 146: 136*
[Box 613, Hillsborough, N.C.] Postjuvenal quill molt in cardinals *(Richmondena cardinalis)* is delayed in its inception as compared with the usual passerine postmuptial molt. The slow primary molt is still in progress long after completion of the body molt.--Courtesy/ Paul A. Stewart.

Blake, Charles H. WEAR AND WING LENGTH IN THE CARDINAL. *Bird-Banding* 42 (4): 295. Oct. 1971. *WR 146: 137*
[Box 613, Hillsborough, N.C.] It was estimated that 2 mm were lost from the wing length of cardinals *(Richmondena cardinalis)* during the period April through August.--Courtesy/ Paul A. Stewart.

Brooke, R. K. GEOGRAPHICAL VARIATION IN THE LITTLE SWIFT *APUS AFFINIS* (AVES: APODIDAE). *Durban Mus. Novit.* 9(7): 93-103. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 137*
[Durban Mus., Durban, South Africa.] Data are given on range, coloration, measurements and weight, locality records, etc. for 10 recognized races of this species including the new subspecies *furcatus* from Java.

Brooke, R. K. GEOGRAPHICAL VARIATION IN THE SWIFTS *APUS HORUS* AND *APUS CAFFER* (AVES: APODIDAE). *Durban Mus. Novit.* 9(4): 29-38. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 137*
[Durban Mus., Durban, South Africa.]

Cano, Antonio, and Claus Koenig. DER WUESTENGIMPEL *(RHODOPECHYS GITHAGINEA)*: BRUTVOGEL IN EUROPA. [THE TRUMPETER BULLFINCH *(RHODOPECHYS GITHAGINEA)*: BREEDING BIRD IN EUROPE.] *J. Ornithol.* 112(4): 461-462, illus. 1971. [From Biol. Abstr. 53(11), 1972. In German.] *WR 146: 137*
[Almeria, Spain.]

Cooper, J. THE BREEDING OF THE FISCAL SHRIKE IN SOUTHERN AFRICA. *Ostrich* 42(3): 166-174. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 137*
[SANCCOB, c/o Gov. Guano Isl., Cape Town, South Africa.] The nest records for the fiscal shrike *Lanius collaris* in the collection of the South African Ornithological Society (total 1147) are analyzed with special reference to geographical variation.

Cooper, J. POST-NESTLING DEVELOPMENT IN THE FISCAL SHRIKE. *Ostrich* 42(3): 175-178. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 137*
[SANCCOB, c/o Gov. Guano Isl., Cape Town, South Africa.] The post-nesting development of the fiscal shrike *Lanius collaris* is discussed from data obtained from 2 artificially reared fledglings.

Cova, Carlo. *PHYLLOSCOPUS COLLYBITA*. [*PHYLLOCOPUS COLLYBITA* (CHIFFCHAFF).] *Riv. Ital. Ornitol.* 41(2): 108-116. 1971. [From Biol. Abstr. 53(8), 1972. In Italian.] *WR 146: 137*
Description of morphological changes of the chiffchaff from its southeastern to its northern habitat.

Cramp, Stanley, and J. F. Reynolds. STUDIES OF LESS FAMILIAR BIRDS *168* CREAM-COLOURED COURSER. *British Birds* 65(3): 120-124 + 6 pls. Mar. 1972. *WR 146: 137*
[32 Queen Court, London, England.] *"Cursorius cursor."*

Cunningham-van Someren, G. R. BREEDING OF *PLOCEUS BADIUS* (CASSIN) IN THE SUDAN. *Bull. British Ornithol. Club* 91(6): 150-151. 20 Dec. 1971. *WR 146: 137*

Darley, J. A., D. M. Scott, and N. K. Taylor. TERRITORIAL FIDELITY OF CATBIRDS. *Canadian J. Zool.* 49(11): 1465-1478, illus. 1971. [From Biol. Abstr. 53(9), 1972. In English with French summ.] *WR 146: 137*
[St. Mary's Univ., Halifax, Nova Scotia, Canada.] *"Dumetella carolinensis."*

Davis, T. Antony. VARIATION IN NEST-STRUCTURE OF THE COMMON WEAVERBIRD *PLOCEUS PHILIPPINUS* (L.) OF INDIA. *Forma Functio* 4(3): 225-239, illus. 1971. [From Biol. Abstr. 53(5), 1972. In English with German and French summ.] *WR 146: 137*
[203 Barrackpore Trunkroad, Calcutta, West Bengal, India.]

De Carlo, Elio A. APPUNTI SULLA BIOLOGIA DEL CUCULO DAL CIUFFO *(CLAMATOR GLANDARIUS).* [REMARKS ON THE BIOLOGY OF THE GREAT SPOTTED CUCKOO *(CLAMATOR GLANDARIUS).*] *Riv. Ital. Ornitol.* 41(2): 86-107, illus. 1971. [From Biol. Abstr. 53(8), 1972. In Italian.] *WR 146: 138*

Diesselhorst, Gerd. DIE WESTFUNDE DES ZWERGSCHNAEPPERS *(FICEDULA PARVA)* IM HERBST. [THE WESTERN FINDS OF THE RED-BREASTED FLYCATCHER *(FICEDULA PARVA)* IN AUTUMN.] *Ans. Ornithol. Ges. Bayern* 10(2): 92-96. 1971. [From Biol. Abstr. 53(4), 1972. In German with English summ.] *WR 146: 138*
[Zool. Staatssammlung, 19 Maria-Ward-St., Munich, Germany.]

Diesselhorst, Gerd. MASSE, GEWICHTE, GESCHLECHTSKENNZEICHEN UND GESCHLECHTS-DIMORPHISMUS IN EINER SUEDDEUTSCHEN DORNGRASMUECKEN-POPULATION *(SYLVIA COMMUNIS).* [MEASUREMENTS, WEIGHT AND SEXUAL DIMORPHISM IN A SOUTHERN GERMAN WHITETHROAT POPULATION *(SYLVIA COMMUNIS).*] *J. Ornithol.* 112(3): 279-301, illus. 1971. [From Biol. Abstr. 53(7), 1972. In German with English summ.] *WR 146: 138*
[Zool. Staatssammlung, 19 Maria-Ward-St., Munich, Germany.]

Diesselhorst, Gerd. SONNENVOGEL *(LEIOTHRIX LUTEA)* BRUETETE IN NIEDERSACHSEN: MISSGLUECKTER VERSUCH EINER ANSIEDLUNG. [PEKING ROBINS *(LEIOTHRIX LUTEA)* BRED IN LOWER SAXONY: UNSUCCESSFUL ATTEMPT AT SETTLING.] *Bonn. Zool. Beitr.* 22(3/4): 252-254. 1971. [From Biol. Abstr. 53(10), 1972. In German with English summ.] *WR 146: 138*
[Zool. Staatssammlung, 19 Maria-Ward-St., Munich, Germany.]

Eddinger, C. Robert. DISCOVERY OF THE NEST OF THE KAUAI AKEPA. *Wilson Bull.* 84(1): 95-97, 2 figs. Mar. 1972. *WR 146: 138*
[Univ. Hawaii, Honolulu.] *"Loxops coccinea."*--Courtesy/ Paul A. Stewart.

Emlen, John T. SIZE AND STRUCTURE OF A WINTERING AVIAN COMMUNITY IN SOUTHERN TEXAS. *Ecology* 53(2): 317-329, 7 figs. Late Spring 1972. *WR 146: 138*
[Univ. Wis., Madison.] Presentation of data on absolute population densities, biomass, community composition, and habitat relations of the land birds, excluding birds of prey, transient swallows, and blackbirds, wintering on a 25.4-km^2 study area centered on the Welder Wildlife Refuge near Sinton, Texas.--Courtesy/ Paul A. Stewart.

Enders, Frank, and William Post. WHITE-SPOTTING IN THE GENUS *AMMOSPIZA* AND OTHER GRASSLAND SPARROWS. *Bird-Banding* 42(3): 210-219. July 1971. *WR 146: 138*
[N.C. State Univ., Raleigh.] A high incidence of white spotting or random partial albinism was found in sharp-tailed and seaside sparrows *(Ammospiza caudacuta* and *A. maritima)* in northeastern North America. An explanation of the white spotting is that it is a "genetic polymorphism maintained by a selective pressure."--Courtesy/ Paul A. Stewart.

George, William G. BREEDING STATUS OF THE PURPLE GALLINULE, BROWN CREEPER, AND SWAINSON'S WARBLER IN ILLINOIS. *Wilson Bull.* 84(2): 208-210. June 1972. *WR 146: 138*
[Southern Ill. Univ., Carbondale.] *"Porphyrula martinica, Certhia familiaris,* and *Limnothylpis swainsonii."*--Courtesy/ Paul A. Stewart.

Gere, Géza. A SZOMJAZÁST TÜRÖ ÁLLATOKRÓL. [THIRST TOLERATING ANIMALS.] *Allattani Kozl* 58(1-4): 167-170, illus. 1971. [From Biol. Abstr. 53(4), 1972. In Hungarian with English summ.] *WR 146: 138*
[Budapest, Hungary.] *"Taeniopygia guttata."*

Gust, Peter Jürgen. DER BIRKENZEISIG *(CARDUELIS FLAMMEA)* ALS BRUTVOGEL AUF NORDERNEY. [THE COMMON REDPOLL *(CARDUELIS FLAMMEA)* AS A BREEDING BIRD OF NORDERNEY (EAST FRISIAN ISLANDS).] *Ornithol. Mitt.* 24(1): 8-9. Jan. 1972. In German. *WR 146: 138*
[Landessammlung für Naturkunde, Karlsruhe, Germany.]

Haneda, Kenzo, and Hiroshi Nakamura. [LIFE HISTORY OF THE JAPANESE GREENFINCH BREEDING BIOLOGY: 1.] *Tori Bull. Ornithol. Soc. Japan* 20(88): 41-59, illus. 1970. [From Biol. Abstr. 53(4), 1972. In Japanese with English summ.] *WR 146: 139*

"Chloris sinica minor."

Havlín, Jiří. NESTING BIOLOGY OF THE GREAT REED WARBLER AND REED WARBLER ON THE NÁMĚSTSKÉ RYBNÍKY PONDS (CZECHOSLOVAKIA). *Zool. Listy* 20(1): 51-68, 4 figs. + 2 pls. 1971. *WR 146: 139*

[Czechoslovak Acad. Sci., Brno, Czechoslovakia.] *"Acrocephalus arundinaceus* and *A. scirpaceus."*

Ives, N. L. POSSIBLE NEST OF NIGHT PARROT IN THE PILBARA, WEST AUSTRALIA. *West. Australian Nat.* 12(1): 11-12. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 139*

[Applecross, Western Australia.] *"Geopsittacus occidentalis."*

Karr, James R. WINTERING KENTUCKY WARBLERS *(OPORORNIS FORMOSUS)* AND A WARNING TO BANDERS. *Bird-Banding* 42(4): 299. Oct. 1971. *WR 146: 139*

[Smithsonian Tropical Res. Inst., P.O. Box 2072, Balboa, Canal Zone.] "Because of the danger of infection and/or subsequent entanglement great care should be taken to remove all net when it is necessary to cut nets to remove birds."--Courtesy/ Paul A. Stewart.

Kern, Michael D., and James R. King. TESTOSTERONE-INDUCED SINGING IN FEMALE WHITE-CROWNED SPARROWS. *Condor* 74(2): 204-209, 4 figs. Summer 1972. *WR 146: 139*

[Fordham Univ., Bronx, N.Y.] "It appears that androgens are a normal, if secondary, part of the endocrine regulation of reproduction in females of many avian species, and that androgenic effects may be externalized as song in at least a few of these species."--Courtesy/ Paul A. Stewart.

Kilham, Lawrence. HABITS OF THE CRIMSON-CRESTED WOODPECKER IN PANAMA. *Wilson Bull.* 84(1): 28-47, 4 figs. Mar. 1972. *WR 146: 139*

[Dartmouth Med. School, Hanover, N.H.] The following aspects of the crimson-crested woodpecker's *(Campephilus [Phloeoceastes] melanoleucos)* behavior are discussed: communication, excavation of nest cavities, nesting, young after leaving nest, territorial and agonistic behavior, interactions with other species, and feeding behavior.--Courtesy/ Paul A. Stewart.

Kilham, Lawrence. SHORTNESS OF TAIL IN RED-CROWNED WOODPECKERS AND THEIR HABIT OF ENTERING ROOST HOLES BACKWARD. *Condor* 74(2): 202-204, 2 figs. Summer 1972. *WR 146: 139*

[Dartmouth Med. School, Hanover, N.H.] By backing into cavities too small for the birds to turn around in, red-crowned woodpeckers *(Melanerpes rubricapillus)* are able to use very small cavities for roosting. Small branch stubs were found generally available; whereas, stubs large enough for the type cavity used for nesting were scarce. The short tail may have evolved in association with the need for using the small cavities.--Courtesy/ Paul A. Stewart.

LaBastille, A., D. G. Allen, and L. W. Durrell. BEHAVIOR AND FEATHER STRUCTURE OF THE QUETZAL. *Auk* 89(2): 339-348, 2 figs. Apr. 1972. *WR 146: 139*

[c/o Cornell Univ., Ithaca, N.Y.] The following information is given on the quetzal, *Pharomachrus mocinno mocinno*: habitat; coloration; movements; vocalization; and territorial and nesting behavior.--Courtesy/ Paul A. Stewart.

Lewis, Robert Alan. THE TEMPORAL ORGANIZATION OF REPRODUCTIVE AND ASSOCIATED CYCLES OF THE PUGET SOUND WHITE-CROWNED SPARROW, *ZONOTRICHIA LEUCOPHRYS PUGETENSIS* GRINNELL. *Ph.D. thesis, Univ. Wash.* 173 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(11), 1972.] *WR 146: 139*

Löschau, Martin. NEUE BRUTNACHWEISE DES SOMMERGOLDHÄHNCHENS *(REGULUS IGNICAPILLUS)* IN DER MARK BRANDENBURG. [NEW BREEDING RECORDS OF THE FIRECREST *(REGULUS IGNICAPILLUS)* IN THE BRANDENBURG MARCHES.] *Ornithol. Mitt.* 24(1): 17-19. Jan. 1972. In German. *WR 146: 140*
[Taurogger Strasse 37, Berlin, Germany.]

Madge, S. G. NOTES ON THE BREEDING OF THE BUSHY-CRESTED HORNBILL *ANORRHINUS GALERITUS*. *Malayan Nat. J.* 23(1): 1-6, illus. 1969/1970. [From Biol. Abstr. 53(4), 1972.] *WR 146: 140*
[Firway End, George Hill, Crediton, Devon, England.] In this species, the nesting female is shut into a hole in a tree, and is fed by a group rather than a single male. A detailed description is given of a nest observed by the author.

Mees, G. F. THE PHILIPPINE SUBSPECIES OF *CENTROPUS BENGALENSIS* (GMELIN) (AVES, CUCULIDAE). *Zool. Meded. Rijksmus. Nat. Hist. Leiden* 45(18): 189-191. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 140*
[Rijksmus. Nat. Hist., Leiden, Netherlands.]

Moltoni, Edgardo. LA CINCIARELLA ALGERINA *(PARUS CERULEUS ULTRAMARINUS*, BONAPARTE) È UCCELLO SEDENTARIO NELL'ISOLA PANTELLERIA (TRAPANI). [THE ALGERIAN AZURE TIT *(PARUS CAERULEUS ULTRAMARINUS*, BONAPARTE) IS A SEDENTARY BIRD ON THE ISLAND OF PANTELLERIA (TRAPANI).] *Riv. Ital. Ornitol.* 41(1): 25-27, illus. 1971. [From Biol. Abstr. 53(8), 1972. In Italian.] *WR 146: 140*
[Mus. Civ. Stor. Nat., Milan, Italy.]

Morse, Douglass H. HABITAT DIFFERENCES OF SWAINSON'S AND HERMIT THRUSHES. *Wilson Bull.* 84(2): 206-208. June 1972. *WR 146: 140*
[Univ. Md., College Park.] The Swainson's thrush *(Hylocichla ustulata)* is socially subordinate to the hermit thrush *(H. fuscescens)*. Social interactions may be a major determinant deciding which of these two species will occupy any given habitat.--Courtesy/ Paul A. Stewart.

Morton, Martin L., Judith L. Horstmann, and Janet M. Osborn. REPRODUCTIVE CYCLE AND NESTING SUCCESS OF THE MOUNTAIN WHITE-CROWNED SPARROW *(ZONOTRICHIA LEUCOPHRYS ORIANTHA)* IN THE CENTRAL SIERRA NEVADA. *Condor* 74(2): 152-163, 4 figs. Summer 1972. *WR 146: 140*
[Occidental Coll., Los Angeles, Calif.] The following are discussed: time of arrival, territories, return of banded birds, sex and age distribution, the reproductive cycle, nest construction and location, laying schedule, clutch size, attentiveness during incubation, incubation period, mortality, renesting, and productivity.--Courtesy/ Paul A. Stewart.

Nettleship, David N. BREEDING SUCCESS OF THE COMMON PUFFIN *(FRATERCULA ARCTICA* L.*)* ON DIFFERENT HABITATS AT GREAT ISLAND, NEWFOUNDLAND. *Ecol. Monogr.* 42(2): 239-268, 12 figs. Spring 1972. *WR 146: 140*
[Canadian Wildl. Serv., Highway 31, Ottawa, Ontario, Canada.] Factors contributing to breeding success of puffins were studied on Great Island, Newfoundland, in 1968 and 1969. Puffin burrow density was negatively correlated with distance from the cliff edge and positively correlated with angle of slope. These correlations are biologically significant in that close to the cliff edge, where the angle of slope was steep, breeding success was significantly higher than on adjacent level habitat. Hatching success was higher on slope habitat, mainly because the incidence of egg disappearance was lower during incubation; also the frequency of infertile eggs was greater on level habitat. Fledging success was higher on slope habitat, and higher on both habitats in 1969. Frequency of chick deaths in the nest and disappearance before fledging was higher on level habitat in both years. Fledging success was higher for early-hatched chicks in both habitats. Total breeding success was higher on slope habitat, and higher in both habitats in 1969. Fledging condition of chicks varied according to the habitat and time period in which they were raised. On the average, body weight at fledging was greater and less variable for birds on

slope habitat; early-hatched chicks were heaviest in both habitats. Wing length of young at fledging did not differ. Early-hatched chicks on slope habitat fledged quickest (also quicker than early-hatched chicks on level habitat); late-hatched birds on slope fledged slower than late-hatched birds on level habitat. Age at fledging was greater in 1968 than in 1969 on both habitats. Meal size delivered to chicks by parents was the same on the two habitats, but frequency of feeding was greater on slope than level habitat. Breeding pairs on slope habitat were unable to raise two chicks (artificial twins) to fledging; similarly, one adult could not rear a single chick. Adults feeding chicks on level habitat were attacked and robbed more frequently by gulls than birds on slope habitat, probably because escape (take-off) from an attack was quicker on slope than on level ground.--From abstr. Courtesy/ Paul A. Stewart.

Ortiz-Crespo, Fernando I. WINTER OCCURRENCES OF *SELASPHORUS* HUMMINGBIRDS IN THE SAN FRANCISCO BAY REGION. *Bird-Banding* 42(4): 290-292. Oct. 1971. *WR 146: 141*

[Univ. Calif., Berkeley.] Hummingbirds were found at Berkeley, California as late in the winter as 1 January.--Courtesy/ Paul A. Stewart.

Parkes, Kenneth C., and Mary Heimerdinger Clench. RECOVERY OF A PENNSYLVANIA-BANDED BLUE-GRAY GNATCATCHER IN WESTERN MEXICO. *Condor* 74(2): 222. Summer 1972. *WR 146: 141*

[Carnegie Mus., Pittsburgh, Pa.] *"Polioptila caerulea."*--Courtesy/ Paul A. Stewart.

Pulliam, Ronald, Barrie Gilbert, Peter Klopfer, Dennis McDonald, Linda McDonald, and George Millikan. ON THE EVOLUTION OF SOCIALITY, WITH PARTICULAR REFERENCE TO *TIARIS OLIVACEA*. *Wilson Bull.* 84(1): 77-89, 3 figs. Mar. 1972. *WR 146: 141*

[Duke Univ., Durham, N.C.] Summary: The Yellow-faced Grassquit *(Tiaris olivacea)* is discontinuously distributed and highly social in Costa Rica. In Jamaica its distribution is continuous and it is aggressively territorial. On Cayman Brac we estimate that grassquit population consists of 400-1,500 individuals which seem intermediate between Costa Rican and Jamaican grassquits in their social organization. We speculate that aggressive behavior of the sort we have characterized as "selfish" cannot arise except under conditions of considerable genetic variability.--Courtesy/ Paul A. Stewart.

Radabaugh, Bruce E. DOUBLE-BROODEDNESS IN THE KIRTLAND'S WARBLER. *Bird-Banding* 43(1): 55. Jan. 1972. *WR 146: 141*

[4171 Airport Rd., Waterford, Mich.] *"Dendroica kirtlandii."*--Courtesy/ Paul A. Stewart.

Radu, Dimitrie. PRIVIGHETOAREA CU GUSĂ ALBASTRĂ *(LUSCINIA SVECICA CYANECULA* (MEISNER)*)* CUIBARESTE ÎN DELTA DUNĂRII. [NESTING BY THE NIGHTINGALE *LUSCINIA SVECICA CYANECULA* (MEISNER) IN THE DANUBE DELTA.] *Stud. Cercet. Biol. Ser. Zool.* 22(6): 555-562, illus. 1970. [From Biol. Abstr. 53(10), 1972. In Romanian with English summ.] *WR 146: 141*

[Gradina Zool., Bucharest, Romania.]

Roberts, J. O. L. SURVIVAL AMONG SOME NORTH AMERICAN WOOD WARBLERS. *Bird-Banding* 42(3): 165-184, 1 fig. July 1971. *WR 146: 141*

[22 Rowanwood Ave., Toronto, Ontario, Canada.] The average annual survival of adult warblers of 6 spp. is estimated to be 64% with a standard error of 3.9%. Average annual fledgling production ranges from 1.5 to 3.0 per pair. The average annual survival of 60% is normal among North American wood warblers.--From summ. Courtesy/ Paul A. Stewart.

Rohwer, Sievert A. SYSTEMATICS AND EVOLUTION OF GREAT PLAINS MEADOWLARKS, GENUS *STURNELLA*. *Ph.D. thesis, Univ. Kans.* 152 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 141*

Schroeder, Max H. VESPER SPARROW NESTS ABANDONED AFTER SNOW. *Wilson Bull.* 84(1): 98-99. Mar. 1972. *WR 146: 142*
[Denver Wildl. Res. Cent., Denver, Colo.] *"Pooecetes gramineus."*--Courtesy/ Paul A. Stewart.

Sick, Helmut. BEOBACHTUNGEN AM FLAMMENKOPF, *OXYRUNCUS*. [OBSERVATIONS ON THE SHARPBILL, *OXYRUNCUS*.] *Bonn. Zool. Beitr.* 22(3/4): 255-260, illus. 1971. [From Biol. Abstr. 53(10), 1972. In German.] *WR 146: 142*
[Mus. Nac., Quinta Boa Vista, Rio de Janeiro, Brazil.] *"O. cristatus."*

Smith, Ernest Linwood. THE EFFECTS OF HEAT AND ARIDITY ON REPRODUCTIVE SUCCESS OF THE CURVE-BILLED THRASHER. *Ph.D. thesis, Univ. Ariz.* 66 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 142*

Stevenson, Henry M. RECORDS OF THE SCARLET IBIS AND RED-BREASTED BLACKBIRD IN ECUADOR. *Wilson Bull.* 84(1): 99. Mar. 1972. *WR 146: 142*
[Fla. State Univ., Tallahassee.] *"Eudocimus ruber* and *Leistes militaris."*--Courtesy/ Paul A. Stewart.

Stewart, Robert M., and Kate Darling. WINTER SOCIAL HIERARCHY OF WHITE-CROWNED SPARROWS. *Point Reyes Bird Observatory Newsletter* no. 22. p. 2-3. June 1972. *WR 146: 142*

Taylor, Walter Kingsley. ANALYSIS OF OVENBIRDS KILLED IN CENTRAL FLORIDA. *Bird-Banding* 43(1): 15-19. Jan. 1972. *WR 146: 142*
[Fla. Technol. Univ., Orlando.] Of 59,032 warblers reported killed at tall structures in the eastern United States, 19% were ovenbirds *(Seiurus aurocapillus)*. Data obtained from 740 fall migrating ovenbirds collected at the WDBO-TV tower since 11 September 1969 are presented. Adults outnumbered immatures and females outnumbered males. Males averaged heavier than females and immatures averaged heavier than adults. Data on wing chords from 127 ovenbirds indicate that males of both age classes have longer mean wing lengths than females, and adult males have the longest mean wing length.--From summ. Courtesy/ Paul A. Stewart.

Taylor, Walter Kingsley, and Bruce H. Anderson. RECOVERY OF A FIVE-YEAR-OLD OVENBIRD. *Bird-Banding* 42(3): 221. July 1971. *WR 146: 142*
[Fla. Technol. Univ., Orlando.] *"Seiurus aurocapillus."*--Courtesy/ Paul A. Stewart.

Theiss, Norbert. BRUTBIOLOGISCHE BEOBACHTUNGEN BEIM WEISSSTERNIGEN BLAUKEHLCHEN *(LUSCINIA SVECICA CYANECULA)* IM COBURGER LAND. [OBSERVATIONS ON THE BREEDING BIOLOGY OF THE BLUETHROAT *(LUSCINIA SVECICA CYANECULA)* IN THE COBERG REGION (BAVARIA).] *Ornithol. Mitt.* 24(2): 27-31, 3 figs. Feb. 1972. In German. *WR 146: 142*
[Sieben Linden 9, Coburg, Germany.]

Van Riper, Charles III. DISCOVERY OF THE NEST OF THE MAUI CREEPER. *Elepaio* 32(11): 100-102, illus. May 1972. *WR 146: 142*
First discovery of the nest of *Loxops maculata newtoni*.

Walkinshaw, Lawrence H. ADDITIONAL NOTES ON SUMMER BIOLOGY OF TRAILL'S FLYCATCHER. *Bird-Banding* 42(4): 275-278, 1 fig. Oct. 1971. *WR 146: 142*
[1145 Scenic Dr., Muskegon, Mich.] With a table of returns of banded Traill's flycatchers *(Empidonax traillii)* returning up to the seventh year after banding. --Courtesy/ Paul A. Stewart.

Weeks, Samuel Ernest. THE BEHAVIOR OF THE RED-WINGED TINAMOU, *RHYNCHOTUS RUFESCENS*. *Ph.D. thesis, Cornell Univ.* 106 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 142*

Woodall, P. F. NOTES ON A RHODESIAN COLONY OF THE RED BISHOP. *Ostrich* 42 (3): 205-210. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 143*
[P.O. Box H 64, Salisbury, Rhodesia.] *"Euplectes orix."*

Woods, John G. ECTOPARASITES FROM EIGHT TREE SPARROWS WINTERING IN SOUTHERN ONTARIO. *Bird-Banding* 42(4): 292-294. Oct. 1971. *WR 146: 143*
[P.O. Box 115, Guelph, Ontario, Canada.] Five species of ectoparasites were collected from one tree sparrow *(Spizella arborea).*--Courtesy/ Paul A. Stewart.

Woolfenden, Glen E., and Chet E. Winegarner. HOMING BY WINTERING HERMIT THRUSHES. *Bird-Banding* 43(1): 54. Jan. 1972. *WR 146: 143*
[Univ. South Fla., Tampa.] Based on our few banding records, we conclude that at least some hermit thrushes *(Hylocichla guttata)* wintering in Florida occupy specific areas, to which they return from short distances in at most a few hours, and to which they return from breeding grounds several hundred miles north in successive years. The four other species of North American *Hylocichla* thrushes winter in Central and South America. Although they are known to return to the same tropical localities during migration, their status on the wintering grounds remains unknown.--Courtesy/ Paul A. Stewart.

Yunick, Robert P. VARIATIONS IN THE TAIL SPOTTING OF THE SLATE-COLORED JUNCO. *Bird-Banding* 43(1): 38-46, 3 figs. Jan. 1972. *WR 146: 143*
[1527 Myron St., Schenectady, N.Y.] Variation and overlap in the amounts of white areas of slate-colored juncos *(Junco hyemalis)* raise questions on the validity of tail spotting as a useful means of determining age and/or sex.--From summ. Courtesy/ Paul A. Stewart.

REPTILES & AMPHIBIANS

Almaça, Carlos. A HERPETOFAUNA DA SERRA DO GERÊS. [THE HERPETOFAUNA OF SERRA DO GERÊS.] *Protecção Nat. Nov. Ser.* no. 11. p. 26. 1970. In Portuguese. *WR 146: 143*
Listing of 21 spp.

Altman, Ronald, John C. Gorman, Leon L. Bernhardt, and Martin Goldfield. TURTLE-ASSOCIATED SALMONELLOSIS / II. THE RELATIONSHIP OF PET TURTLES TO SALMONELLOSIS IN CHILDREN IN NEW JERSEY. *Am. J. Epidemiol.* 95(6): 518-520. June 1972. *WR 146: 143*
[N.J. State Dep. Health, P.O. Box 1540, Trenton.]

Anderson, James D. EMBRYONIC TEMPERATURE TOLERANCE AND RATE OF DEVELOPMENT IN SOME SALAMANDERS OF THE GENUS *AMBYSTOMA*. *Herpetologica* 28(2): 126-130, 1 fig. June 1972. *WR 146: 143*
[State Univ., Newark, N.J.]

Arndt, Rudolf G. ADDITIONAL RECORDS OF *CLEMMYS MUHLENBERGI* IN DELAWARE, WITH NOTES ON REPRODUCTION. *Bull. Md. Herpetol. Soc.* 8(1): 1-5. Mar. 1972. *WR 146: 143*
[Box 35, R.D. 2, Middletown, Del.]

Baker, Everette F., Jr., Herbert W. Anderson, and Jack Allard. EPIDEMIOLOGICAL ASPECTS OF TURTLE-ASSOCIATED SALMONELLOSIS. *Arch. Environ. Health* 24(1): 1-9, illus. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 143*
[Cent. Dis. Control Act. Off., El Paso, Tex.]

Baker, Robert J., Greg A. Mengden, and James J. Bull. KARYOTYPIC STUDIES OF THIRTY-EIGHT SPECIES OF NORTH AMERICAN SNAKES. *Copeia* 1972(2): 257-265, illus. 8 June 1972. *WR 146: 143*
[Tex. Tech Univ., Lubbock.]

Barrett, Barney B. COOPERATIVE GULF OF MEXICO ESTUARINE INVENTORY AND STUDY, LOUISIANA / PHASE II, HYDROLOGY AND PHASE III, SEDIMENTOLOGY. *La. Wild Life & Fisheries Comm.* 191 p., 56 figs. 1971. *WR 146: 144*
[La. Wild Life & Fisheries Comm., New Orleans.]

Bennett, Albert Farrell. OXYGEN TRANSPORT AND ENERGY METABOLISM IN TWO SPECIES OF LIZARDS, *SAUROMALUS HISPIDUS* AND *VARANUS GOULDII*. *Ph.D. thesis, Univ. Mich.* 236 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 144*

Berger, L., and J. Michałowski. AMPHIBIA (PŁAZY). *Published for Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Scientific Publications Foreign Cooperation Center of the Central Institute for Scientific, Technical, and Economic Information, Warsaw, Poland.* TT 70-55122. 78 p., 51 figs. 1971. Polish original published by Institute of Systematical Zoology, Cracov, Poland, in 1963. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 146: 144*
Translation of "Keys for the Identification of Vertebrates of Poland--Part 2 Amphibia."

Black, Jeffrey Howard. THE TOAD GENUS *BUFO* IN MONTANA. *Northwest Sci.* 45 (3): 156-162. 1971. [From Biol. Abstr. 53(7), 1972.] *WR 146: 144*
[Univ. Mont., Missoula.]

Black, Jeffrey Howard, and Royal Bruce Brunson. BREEDING BEHAVIOR OF THE BOREAL TOAD, *BUFO BOREAS BOREAS* (BAIRD AND GIRARD), IN WESTERN MONTANA. *Great Basin Nat.* 31(2): 109-113, illus. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 144*
[Univ. Okla., Norman.] Breeding populations were observed in 9 ponds in 1966 and 1967. Mating behavior is described and compared to observations of other investigators.

Blanc, Francoise. CONTRIBUTION A L'ÉTUDE DE LA CROISSANCE POST-EMBRYONNAIRE DE *CHAMAELEO LATERALIS* GRAY, 1831. [CONTRIBUTION TO THE STUDY OF THE POST-EMBRYONIC GROWTH OF *CHAMAELEO LATERALIS* GRAY, 1831.] *Ann. Univ. Madagascar Ser. Sci. Nat. Math.* 7. p. 321-343, illus. 1970. [From Biol. Abstr. 53(11), 1972. In French with English summ.] *WR 146: 144*
[Univ. Madagascar, Tananarive, Malagasy Republic.]

Blanc, Francoise. LE CYCLE REPRODUCTEUR CHEZ LA FEMELLE DE *CHAMAELEO LATERALIS* GRAY, 1831. [THE REPRODUCTIVE CYCLE OF THE FEMALE IN *CHAMAELEO LATERALIS* GRAY, 1831.] *Ann. Univ. Madagascar Ser. Sci. Nat. Math.* 7. p. 345-358, illus. 1970. [From Biol. Abstr. 53(11), 1972. In French with English summ.] *WR 146: 144*
[Univ. Madagascar, Tananarive, Malagasy Republic.] The annual reproductive cycle of *C. lateralis*, a chameleon of Madagascar, was determined from the study of the genital tracts of 1100 females. Young females lay eggs for the first time when about three months old; laying is spread from the 15th of Nov. till the 15th of Aug.; a laying cycle lasts 2.5-3 months, and each female lays from 4 to 23 eggs, on an average, four times a year. The duration of sexual activity and the annual number of layings depend on weather conditions, especially on the relative drought towards the end of the cool season.

Bolaños, Róger. TOXICITY OF COSTA RICAN SNAKE VENOMS FOR THE WHITE MOUSE. *Am. J. Trop. Med. Hyg.* 21(3): 260-263, 1 fig. May 1972. *WR 146: 144*
[Univ. Costa Rica, Montes de Oca, Costa Rica.] Abstract: Venom yields and toxicity levels for Costa Rican snakes are reported. It was found that the sea snake, *Pelamis platurus*, possesses the most potent venom. Taking into consideration toxicity and venom yields, the fer-de-lance, *Bothrops asper* (formerly included in *B. atrox*), appears to be the most dangerous snake in Costa Rica and *Lachesis muta*, despite its impressive size, occupies a relatively unimportant

position. The data show that in toxicity or neutralization experiments in which mice are used it is desirable to prolong the observation period up to 48 hours when employing crotalid venoms and up to 72 hours when using elapide venoms.

Bostic, Dennis L. HERPETOFAUNA OF THE PACIFIC COAST OF NORTH CENTRAL BAJA CALIFORNIA, MEXICO, WITH A DESCRIPTION OF A NEW SUBSPECIES OF *PHYLLODACTYLUS XANTI*. *Trans. San Diego Soc. Nat. Hist.* 16(10): 237-263, illus. 1971. [From Biol. Abstr. 53(3), 1972.] *WR 146: 145*
[Palomar Coll., San Marcos, Calif.]

Brett, William J. PERSISTENT RHYTHMS OF LOMOTION ACTIVITY IN THE TURTLE *PSEUDEMYS SCRIPTA*. *Comp. Biochem. Physiol. A Comp. Physiol.* 40(4): 925-934, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 145*
[Ind. State Univ., Terre Haute.]

Broadley, Donald G. THE REPTILES AND AMPHIBIANS OF ZAMBIA / A CHECK LIST WITH KEYS, DISTRIBUTION RECORDS, AND ECOLOGICAL DATA. *Puku* no. 6. 143 p., 20 figs. + 25 pls. 1971. Price K1.75. *WR 146: 145*
Contains a glossary, keys to the Reptilia and Amphibia of Zambia, a gazetteer of localities, an index of scientific names, and an index of English names.

Broadley, Donald G. A REVIEW OF THE *NUCRAS TESSELLATA* GROUP (SAURIA: LACERTIDAE). *Arnoldia* (Rhodesia) 5(20): 1-36, 7 figs., 3 pls. 1 Feb. 1972. *WR 146: 145*

Brownell, James Alfred. EFFECTS OF THE INTERACTION BETWEEN A HYBRID TOAD AND PARENTAL SPECIES, *BUFO VALLICEPS* AND *B. WOODHOUSEI*. *Ph.D. thesis, Univ. Tex.* (Austin). 167 p. 1971. [From Diss. Abstr. Int. B. Sci. Eng. 33(1), 1972.] *WR 146: 145*

Brygoo, Edouard R., Charles P. Blanc, and Charles A. Domergue. NOTES SUR LES *BROOKESIA* DE MADAGASCAR: III. *BROOKESIA KARCHEI* N. SP. DU MASSIF DU MAROJEZY. [NOTES ON THE *BROOKESIA* OF MADAGASCAR: III. *BROOKESIA KARCHEI* SP. NOV. OF MOUNT MAROJEZY.] *Ann. Univ. Madagascar Ser. Sci. Nat. Math.* 7. p. 267-271, illus. 1970. [From Biol. Abstr. 53(11), 1972. In French with English summ.] *WR 146: 145*
[Inst. Pasteur, Tananarive, Malagasy Republic.]

Brygoo, Edouard R., Charles P. Blanc, and Charles A. Domergue. NOTES SUR LES *CHAMAELEO* DE MADAGASCAR: VI. *C. GASTROTAENIA MAROJEZENSIS* N. SUBSP. D'UN MASSIF MONTAGNEUX DU NORD-EST. [NOTES ON THE *CHAMAELEO* OF MADAGASCAR: VI. *C. GASTROTAENIA MAROJEZENSIS* SUBSP. NOV. FROM A MOUNTAINOUS MASSIF OF THE NORTHEAST.] *Ann. Univ. Madagascar Ser. Sci. Nat. Math.* 7. p. 273-278, illus. 1970. [From Biol. Abstr. 53(11), 1972. In French with English summ.] *WR 146: 145*
[Inst. Pasteur, Tananarive, Malagasy Republic.]

Brygoo, E. R., and C. A. Domergue. NOTES SUR LES *BROOKESIA* (CAMÉLÉONIDÉS) DE MADAGASCAR: DESCRIPTION D'UNE ESPÈCE NOUVELLE, *B. ANTOETRAE* N. SP. ET DES HÉMIPÉNIS DE *B. STUMPFII* ET *B. EBENAUI*: REMARQUES SUR LA RÉPARTITION DE *B. STUMPFII*. [NOTES ON THE *BROOKESIA* (CHAMELEONIDAE) OF MADAGASCAR: DESCRIPTION OF A NEW SPECIES, *B. ANTOETRAE* SP. NOV. AND OF THE HEMIPENIS OF *B. STUMPFII* AND *B. EBENAUI*: REMARKS ON THE DISTRIBUTION OF *B. STUMPFII*.] *Bull. Mus. Natl. Hist. Nat.* (Paris) 42(5): 830-838, illus. 1970. [From Biol. Abstr. 53(11), 1972. In French.] *WR 146: 145*
[Inst. Pasteur, Tananarive, Malagasy Republic.]

Bullock, Robert E. CANNIBALISM IN CAPTIVE RATTLESNAKES. *Great Basin Nat.* 31 (2): 49-50, illus. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 145*
[Univ. Lethbridge, Lethbridge, Alberta, Canada.] A juvenile prairie rattlesnake *Crotalus viridis* swallowed a cage-mate of similar size, tail first.

Burger, William Leslie. GENERA OF PITVIPERS (SERPENTES: CROTALIDAE). *Ph.D. thesis, Univ. Kans.* 201 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 146*

Burnley, John M., and Frederick C. Schlauch. BIBLIOGRAPHY OF REFERENCES TO THE HERPETOLOGY OF LONG ISLAND. *Engelhardtia* 3(2): 22-28. June 1970. *WR 146: 146*
[296 Jerome Ave., Carle Place, Long Island, N.Y.] Bibliography of papers by 53 authors.

Burnley, John M., and Frederick C. Schlauch. BIBLIOGRAPHY OF REFERENCES TO THE HERPETOLOGY OF LONG ISLAND; FIRST SUPPLEMENT. *Engelhardtia* 4(2): 15-16. July 1971. *WR 146: 146*
[296 Jerome Ave., Carle Place, Long Island, N.Y.]

Burnley, John M., and Frederick C. Schlauch. BIBLIOGRAPHY OF REFERENCES TO THE HERPETOLOGY OF LONG ISLAND; SECOND SUPPLEMENT. *Engelhardtia* 4(4): 42. Dec. 1971. *WR 146: 146*
[296 Jerome Ave., Carle Place, Long Island, N.Y.]

Bustard, Robert. THE LEATHERY TURTLE. *Oryx* 11(4): 233-239, illus. Jan. 1972. *WR 146: 146*
"Dermochelidae."

Campbell, Phillip, and W. K. Davis. THE EFFECTS OF VARIOUS COMBINATIONS OF TEMPERATURE AND RELATIVE HUMIDITY ON THE EVAPORATIVE WATER LOSS OF *BUFO VALLICEPS*. *Tex. J. Sci.* 22(4): 389-402, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 146: 146*
[Baylor Univ. Coll. Dent., Dallas, Tex.]

Christiansen, James L., and Arthur E. Dunham. REPRODUCTION OF THE YELLOW MUD TURTLE *(KINOSTERNON FLAVESCENS FLAVESCENS)* IN NEW MEXICO. *Herpetologica* 28(2): 130-137, 2 figs. June 1972. *WR 146: 146*
[Drake Univ., Des Moines, Iowa.]

Cochran, Doris M., and Coleman J. Goin. THE NEW FIELD BOOK OF REPTILES AND AMPHIBIANS. *G. P. Putnam's Sons* (New York). xxii + 359 p., 100 figs. + 16 color pls., 4.75 x 7.5 in. 1970. Price $5.95. *WR 146: 146*
"The only guide to the identification of every known species of snake, lizard, alligator and crocodile, salamander, newt, turtle, frog, and toad in the United States, including Alaska and Hawaii. The text, which reports the latest classifications and most recent discoveries, provides descriptions that pinpoint the distinguishing characteristics, habits, and geographical ranges of every known species and hundreds of subspecies of all fifty states. It also supplies data on voices, mating habits, and habitat preferences."

Cogger, H. G. THE REPTILES OF LORD HOWE ISLAND. *Proc. Linn. Soc. New South Wales* 96(1): 23-38, illus. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 146*
[Australian Mus., Sydney, Australia.]

Collins, Joseph T., and George T. McDuffie. SNAKES OF THE CINCINNATI REGION. *Explorer* 14(1): 24-28, illus. Spring 1972. *WR 146: 146*
[Mus. Nat. Hist., Univ. Kans., Lawrence.]

Combes, Claude, and Marie-Thérèse Gerbeaux. RECHERCHES ÉCO-PARASITOLOGIQUES SUR L'HELMINTHOFAUNE DE *RANA RIDIBUNDA PEREZI* (AMPHIBIEN ANOURE) DANS L'EST DES PYRÉNÉES. [ECO-PARASITOLOGIC RESEARCH ON THE HELMINTHOFAUNA OF *RANA RIDIBUNDA PEREZI* (BATRACHIA ANURA) IN EASTERN PYRENEES.] *Vie Milieu Ser. C Biol. Terr.* 21 (1): 121-158, illus. 1970. [From Biol. Abstr. 53(12), 1972. In French with German and English summ.] *WR 146: 146*
[Coll. Sci. Univ., Perpignan, France.] The characteristics of the local helminthofauna are established from the dissection of 465 *Rana ridibunda perezi*.

Conzelmann, Paul J., and Robert A. Thomas. NOTEWORTHY LOCALITY RECORDS FOR SOME LOUISIANA REPTILES. *Bull. Philadelphia Herpetol. Soc.* 19: 15-18, 1 fig. 1971. *WR 146: 147*
[Univ. Southwestern La., Lafayette.] *"Terrapene ornata ornata, Hemidactylus turcicus turcicus, Elaphe guttata,* and *Lampropeltis calligaster calligaster."*

Cruce, Mihai. CRESTEREA SI STRUCTURA UNEI POPULATII DE *LACERTA TAURICA TAURICA* PALL. [GROWTH AND STRUCTURE IN A POPULATION OF *LACERTA TAURICA TAURICA* PALL.] *Stud. Cercet. Biol. Ser. Zool.* 23(5): 507-516, illus. 1971. [From Biol. Abstr. 53(10), 1972. In Romanian with English summ.] *WR 146: 147*
[Univ. Craiova, Craiova, Romania.] Notes are presented on the growth and structure in a population of *L. taurica taurica* from the Jui-waterplain. *L. taurica* growth takes place mostly between the first and the second hibernation period, diminishing visibly and in some individuals ceasing after the third hibernation period. The population structure was determined on the basis of the known age classes by measuring the head and trunk length in marked individuals.

Cruce, Mihai. OBSERVATII PRIVIND RASPINDIREA GEOGRAFICA SI ECOLOGIA SOPIRLEI DE IARBA *(LACERTA TAURICE* PALLAS) IN ROMANIA. [OBSERVATIONS CONCERNING THE GEOGRAPHIC DISTRIBUTION AND ECOLOGY OF THE LIZARD *LACERTA TAURICA* PALLAS IN ROMANIA.] *Stud. Cercet. Biol. Ser. Zool.* 23(2): 185-189. 1971. [From Biol. Abstr. 53(11), 1972. In Romanian with English summ.] *WR 146: 147*
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Darevskii, I. S., N. N. Drozdov, and V. F. Orlova. [NEW DATA ON GEOGRAPHICAL DISTRIBUTION OF *PELODYTES CAUCASICUS* BOULENGER (AMPHIBIA, SALIENTIA).] *Vestn. Zool.* 5(3): 77-78. 1971. [From Biol. Abstr. 53(7), 1972. In Russian with English summ.] *WR 146: 147*
[Zool. Inst., Acad. Sci. USSR, Leningrad, USSR.]

Duellman, William E. A NEW SPECIES OF *HYLA* FROM AMAZONIAN ECUADOR. *Copeia* 1972(2): 265-271, 4 figs. 8 June 1972. *WR 146: 147*
[Univ. Kans., Lawrence.] *"Hyla aruentomma."*

Duguy, R. NOTES SUR LA BIOLOGIE DE *VIPERA ASPIS* L. DANS DES PYRENEES. [NOTES ON THE BIOLOGY OF *VIPERA ASPIS* L. IN THE PYRENEES.] *Terre Vie* 26(1): 98-117, 7 figs. 1972. In French with English summ. *WR 146: 147*
[Mus. Hist. Nat., La Rochelle, France.]

Echelle, Anthony A., Alice F. Echelle, and Henry S. Fitch. OBSERVATIONS OF FISH-EATING AND MAINTENANCE BEHAVIOR IN TWO SPECIES OF *BASILISCUS*. *Copeia* 1972 (2): 387-389. 8 June 1972. *WR 146: 147*
[Univ. Okla. Biol. Sta., Willis.]

El-Wailly, Alwan J., and Hilmi Sabir Al-Uthman. SOME LIZARDS FROM CENTRAL SAUDI ARABIA. *Bull. Iraq Nat. Hist. Mus.* (Univ. Baghdad) 5(1): 39-42. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 147*
[Univ. Baghdad, Baghdad, Iraq.] A list of species and collecting sites for the families Gekkonidae, Agamidae and Lacertidae, many of which have not been recorded in central Saudi Arabia are given.

Ernst, Carl H. TEMPERATURE-ACTIVITY RELATIONSHIP IN THE PAINTED TURTLE, *CHRYSEMIS PICTA*. *Copeia* 1972(2): 217-222. 8 June 1972. *WR 146: 147*
[Southwest Minn. State Coll., Marshall.]

Ewert, Joerg-Peter. AUFNAHME UND VERARBEITUNG VISUELLER INFORMATIONEN IM BEUTEFANG- UND FLUCHTVERHALTEN DER ERDKROETE *BUFO BUFO* (L.). [INFORMATION PROCESSING IN THE VISUAL SYSTEM OF *BUFO BUFO* AND THE RELEASE OF PREY CATCHING AND ESCAPE REACTIONS.] *Verh. Dtsch. Zool. Ges.* 64: 218-226, illus. 1970. [From Biol. Abstr. 53(9), 1972. In German with English summ.] *WR 146: 147*
[Zool. Inst. Tech. Hochsch., Darmstadt, Germany.]

Ewert, J. P., and H. Kleinlogel. JAHRESZEITLICHE AENDERUNG DER WISCH-AKTIVITAET BEI DER ERDKROETE *BUFO BUFO* (L.). [SEASONAL CHANGES IN THE WIPING-ACTIVITY OF THE COMMON TOAD *BUFO BUFO* (L.).] *Z. Tierpsychol.* 28(5): 479-486, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 148*
[Zool. Inst., Tech. Hochsch., Darmstadt, Germany.]

Eyland, E. A. MORAN'S ISLAND MIGRATION MODEL. *Genetics* 69(3): 399-403, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 148*
[Univ. Sydney, Sydney, New South Wales, Australia.]

Fachbach, Gunter. ZUR KLAERUNG VERWANDTSCHAFTLICHER BEZIEHUNGEN BEI VERTRETERN DER GATTUNG *SALAMANDRA* MIT HILFE DER POLYACRYLAMID-DISK-ELEKTRO-PHORESE: II. [THE ELUCIDATION OF THE RELATIONSHIP OF MEMBERS OF THE GENUS *SALAMANDRA* USING POLYACRYLAMIDE-DISC ELECTROPHORESIS: II.] *Z. Zool. Syst. Evolutionsforsch.* 9(3): 181-187, illus. 1971. [From Biol. Abstr. 53(11), 1972. In German with English summ.] *WR 146: 148*
[Univ. Graz, Graz, Austria.]

Ferguson, Gary W. SPECIES DISCRIMINATION BY MALE SIDE-BLOTCHED LIZARDS *UTA STANSBURIANA* IN COLORADO. *Am. Midl. Nat.* 87(2): 523-524. Apr. 1972. *WR 146: 148*
[Kans. State Univ., Manhattan.] Abstract: *Uta stansburiana* males discriminated against females of three sympatric species in male-choice experiments. The role of male choice in reproductive isolation requires further experimentation.

Feuer, Robert C. ECOLOGICAL FACTORS IN SUCCESS AND DISPERSAL OF THE SNAPPING TURTLE *CHELYDRA SERPENTINA* (LINNAEUS). *Bull. Philadelphia Herpetol. Soc.* 19: 3-14. 1971. *WR 146: 148*
[Philadelphia Coll. Pharmacy & Sci., Philadelphia, Pa.] Discussion of: vagility, territoriality, habitat, food and feeding, predators, winter activity, reproductive potential, and limiting factors.

Feuer, Robert C. LITERATURE OF HERPETOLOGY. *Bull. Philadelphia Herpetol. Soc.* 19: 28-30. 1971. *WR 146: 148*
[Philadelphia Coll. Pharmacy & Sci., Philadelphia, Pa.] A list prepared to aid students in a course in Literature of Biology.

Fitch, Henry S., Anthony A. Echelle, and Alice F. Echelle. VARIATION IN THE CENTRAL AMERICAN IGUANID LIZARD, *ANOLIS CUPREUS*, WITH THE DESCRIPTION OF A NEW SUBSPECIES. *Occas. Pap. Mus. Nat. Hist. Univ. Kans.* no. 8. p. 1-20, 6 figs. 28 June 1972. *WR 146: 148*
[Univ. Kans. Nat. Hist. Reservation, Lawrence.]

Fouquette, M. J., Jr., and William F. Pyburn. A NEW COLOMBIAN TREEFROG OF THE *HYLA RUBRA* COMPLEX. *Herpetologica* 28(2): 176-181, 3 figs. June 1972. *WR 146: 148*
[Ariz. State Univ., Tempe.]

Franz, Richard. PARASITES OF REPTILES. (Part 1: Tapeworms). *Bull. Md. Herpetol. Soc.* 8(1): 6-13, 2 figs. Mar. 1972. *WR 146: 148*
[Dulaney Sr. High School, 255 Padonia Rd., Timonium, Md.]

Freitas, J. F. Teixeira, and James E. Dobbin, Jr. CONTRIBUICÃO AO CONHECI-MENTO DA FAUNA HELMINTOLÓGICA DE QUELÔNIOS NO ESTADO DE PERNAMBUCO, BRASIL. [CONTRIBUTION TO THE KNOWLEDGE OF THE HELMINTH FAUNA OF TURTLES IN THE STATE OF PERNAMBUCO, BRAZIL.] *Mem. Inst. Oswaldo Cruz* (Rio de Janeiro) 69(1): 33-39, illus. 1971. [From Biol. Abstr. 53(10), 1972. In Portuguese.] *WR 146: 148*
[Inst. Oswaldo Cruz, Rio de Janeiro, Brazil.]

Gennaro, A. L. HOME RANGE AND MOVEMENTS OF *HOLBROOKIA MACULATA MACULATA* IN EASTERN NEW MEXICO. *Herpetologica* 28(2): 165-168, 3 figs. June 1972. *WR 146: 149*
[Eastern N. Mex. Univ., Portales.] Abstract: A population of *Holbrookia maculata maculata* was studied in a stabilized dune habitat in eastern New Mexico. Over a period of 7 months, a total of 138 adults and 84 juveniles were marked. Ten adult females had an average home range size of 0.06 hectare. Ten adult males had an average home range size of 0.1 hectare. The difference in home range size of males and females was not significant (P= 0.05-0.10). A significant difference (P< 0.01) was noted between movements of adults and juveniles. Juveniles had an average movement of 15.8 m between captures; adults moved an average of 40.2 m between captures. *Holbrookia maculata maculata* appears to favor certain habitat features in selection of its home range area. An explanation is given for the occupancy of active dunes by *Holbrookia maculata ruthveni.*

Gibbons, J. Whitfield. REPRODUCTION, GROWTH, AND SEXUAL DIMORPHISM IN THE CANEBRAKE RATTLESNAKE *(CROTALUS HORRIDUS ATRICAUDATUS). Copeia* 1972(2): 222-226, 5 figs. 8 June 1972. *WR 146: 149*
[Savannah River Ecol. Lab., Aiken, S.C.]

Goin, Coleman J. A SYNOPSIS OF THE TREE FROGS OF SURINAM. *Ann. Carnegie Mus.* 43(1): 1-24, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 149*
[Univ. Fla., Gainesville.] The 30 spp. of tree frogs (Hylidae and Centrolenidae) now known to occur in Surinam are listed. A key, brief diagnoses of the species, and distribution records are included.

Goldberg, Stephen R. SEASONAL WEIGHT AND CYTOLOGICAL CHANGES IN THE FAT BODIES AND LIVER OF THE IGUANID LIZARD *SCELOPORUS JARROVI* COPE. *Copeia* 1972 (2): 227-232, 5 figs. 8 June 1972. *WR 146: 149*
[Whittier Coll., Whittier, Calif.]

Goodman, Donald Eugene. THERMOREGULATION IN THE BROWN WATER SNAKE, *NATRIX TAXISPILOTA*, WITH DISCUSSION OF THE ECOLOGICAL SIGNIFICANCE OF THERMAL PREFERENDA IN THE ORDER SQUAMATA. *Ph.D. thesis, Univ. Fla.* 96 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 149*

Goris, Richard C. FOOD HABITS OF THE JIMUGURI, *ELAPHE CONSPICILLATA. Snake* 3(1): 70. 1971. [From Biol. Abstr. 53(10), 1972. In English with Japanese summ.] *WR 146: 149*
Results are given on the feeding response of captive specimens to mice and frogs.

Gray, Robert Holdridge. ECOLOGICAL STUDIES ON COLOR POLYMORPHISM IN THE CRICKET FROG, *ACRIS CREPITANS* BAIRD. *Ph.D. thesis, Ill. State Univ.* 117 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 149*

Gray, Robert H. METACHROSIS OF THE VERTEBRAL STRIPE IN THE CRICKET FROG, *ACRIS CREPITANS. Am. Midl. Nat.* 87(2): 549-551. Apr. 1972. *WR 146: 149*
[Ill. State Univ., Normal.]

Greding, Edward J., Jr. CALL SPECIFICITY AND HYBRID COMPATIBILITY BETWEEN *RANA PIPIENS* AND THREE OTHER *RANA* SPECIES IN CENTRAL AMERICA. *Copeia* 1972(2): 383-385. 8 June 1972. *WR 146: 149*
[Univ. El Salvador, San Salvador, El Salvador.]

Groves, John D. ADDITIONAL NOTES ON THE TURTLE, *CHRYSEMYS SCRIPTA*, IN MARYLAND. *Bull. Md. Herpetol. Soc.* 8(2): 52-53. June 1972. *WR 146: 149*
[Baltimore Zoo, Baltimore, Md.]

Grubb, Jerry Carl. SELECTED ASPECTS OF OLFACTORY AND VISUAL ORIENTATION IN ANURAN AMPHIBIANS. *Ph.D. thesis, Univ. Tex.* (Austin). 84 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 33(1), 1972.] *WR 146: 150*

Gruberg, Edward R., and R. Victoria Stirling. OBSERVATIONS ON THE BURROWING HABITS OF THE TIGER SALAMANDER *(AMBYSTOMA TIGRINUM)*. *Herpetol Rev.* 4(3): 85-89, 17 figs. June 1972. *WR 146: 150*
[Mass. Inst. Technol., Cambridge.]

Haacke, W. D. NEW HERPETOLOGICAL RECORDS FROM SOUTH-WEST AFRICA. *Ann. Transvaal Mus.* 26(12): 277-284. 1970. [From Biol. Abstr. 53(9), 1972.] *WR 146: 150*
[Transvaal Mus., Pretoria, South Africa.]

Hall, Russell J. FOOD HABITS OF THE GREAT PLAINS SKINK *(EUMECES OBSOLETUS)*. *Am. Midl. Nat.* 87(2): 258-263. Apr. 1972. *WR 146: 150*
[Mansfield State Coll., Mansfield, Pa.]

Hammer, Donald A., and Raymond L. Linder. BULLFROG FOOD HABITS ON A WATERFOWL PRODUCTION AREA IN SOUTH DAKOTA. *Proc. S. Dak. Acad. Sci.* 50. p. 216-219. 1971. *WR 146: 150*
[Utah State Univ., Logan.] Bullfrogs *(Rana catesbiana)* are not significant predators of either birds or young turtles in mid-July on Lacreek Refuge.

Harris, Herbert S., Jr., and Robert S. Simmons. A CHECKLIST OF THE RATTLESNAKES *(CROTALUS DURISSUS* GROUP) OF SOUTH AMERICA. *Bull. Md. Herpetol. Soc.* 8 (1): 27-32. Mar. 1971. *WR 146: 150*
[Nat. Hist. Soc. Md., 2643 N. Charles St., Baltimore, Md.]

Harris, Herbert S., Jr., and Robert S. Simmons. AN APRIL BIRTH RECORD FOR *CROTALUS LEPIDUS* WITH A SUMMARY OF ANNUAL BROODS IN RATTLESNAKES. *Bull. Md. Herpetol. Soc.* 8(2): 54-56, 1 fig. June 1972. *WR 146: 150*
[Nat. Hist. Soc. Md., 2643 N. Charles St., Baltimore, Md.]

Harris, Herbert S., Jr., and Robert S. Simmons. KEYS TO THE NEOTROPICAL SPECIES AND SUBSPECIES OF THE *CROTALUS DURISSUS* GROUP. *Bull. Md. Herpetol. Soc.* 8(2): 33-40, 11 figs. June 1972. *WR 146: 150*
[Nat. Hist. Soc. Md., 2643 N. Charles St., Baltimore, Md.] The keys are adapted from those published by Peters and Orejas-Miranda (1970) with only necessary changes. The figures have been modified from Hope (1965) in instances where live or preserved material was not readily available.

Heatwole, Harold, and Robert C. Newby. INTERACTION OF INTERNAL RHYTHM AND LOSS OF BODY WATER IN INFLUENCING ACTIVITY LEVELS OF AMPHIBIANS. *Herpetologica* 28(2): 156-162, 2 figs. June 1972. *WR 146: 150*
[Univ. New England, New South Wales, Australia.]

Herpetological Information Search Systems. CURRENT HERPETOLOGICAL TITLES, XX: 1971-1972. *Herpetol Rev.* 4(3): 94-120. June 1972. *WR 146: 150*
[Am. Mus. Nat. Hist., New York, N.Y.] "We have brought to your attention more than 16,000 current titles in the pages of this journal to date."

Meyer, W. Ronald. DESCRIPTIONS OF SOME TADPOLES FROM THAILAND. *Fieldiana Zool.* 58(7): 83-91, illus. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 150*
Descriptions are given for tadpoles belonging to the families Bufonidae, Microhylidae, Ranidae and Rhacophoridae.

Holcomb, Charlie M., Crawford G. Jackson, Jr., and Marguerite M. Jackson. SERUM CHOLESTEROL VALUES IN THREE SPECIES OF TURTLES. *J. Wildl. Dis.* 8(2): 181-182. Apr. 1972. *WR 146: 150*
[Miss. State Coll. Women, Columbus.] *"Chrysemys floridana peninsularis, C. scripta* and *Terrapene carolina."*

Hughes, G. R. THE MARINE TURTLES OF TONGALAND 6. *Lammergeyer* no. 15. p. 15-26, 2 figs. Mar. 1972. *WR 146: 151*

[Oceanographic Res. Inst., Durban, South Africa.] The relative success of the pilot hatchery is discussed in detail and comparisons with the hatching success of a sample of thirty 'wild' nests show that there is no significant difference between untouched and transplanted nests. A growth curve for the loggerhead turtle suggests that it takes approximately 10-12 years for a loggerhead to reach maturity. On reviewing the recovery data since the beginning of research in 1963 it is suggested that there is no cyclic phenomena involved in the return for nesting by loggerhead females. The speed of travel and singleness of purpose exhibited by some migratory loggerhead females suggest that there is a territory to which the turtle returns after nesting. A shift of intervals between nesting seasons; three leatherback females from a three-year interval to a two-year interval, suggest that there is no cyclic phenomena involved in leatherback nesting either.--From summ.

Hunt, Henry William. SOME ASPECTS OF THE POPULATION BIOLOGY OF THE CRICKET FROG, *ACRIS CREPITANS*. *Ph.D. thesis, Univ. Tex.* (Austin). 125 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 33(1), 1972.] *WR 146: 151*

The observation that central populations do not always have a greater population density than peripheral populations contradicts the idea that conditions for the species are optimal in the central part of its range. Individuals in peripheral populations probably have greater difficulties in dispersal because the distances between areas of suitable habitat are greater. Thus inadequate ability to disperse may account for the position of the margin of the species' range. It is possible that the greater genetic uniformity of peripheral populations results not from strong directional selection, but from their relatively greater isolation. It is suggested that greater rates of migration in central populations may prevent the fixation of a single favored allele.

Ingram, William III, and Wilmer W. Tanner. A TAXONOMIC STUDY OF *CROTAPHYTUS COLLARIS* BETWEEN THE RIO GRANDE AND COLORADO RIVERS. *Brigham Young Univ. Sci. Bull. Biol. Ser.* 13(2): 1-29, illus. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 151*

[Brigham Young Univ., Provo, Utah.]

Itämies, Juhani, and Pentti Koskela. DIET OF THE COMMON LIZARD *(LACERTA VIVIPARA* JACQ.). *Aquilo Ser. Zool.* 11: 37-43, 5 figs. 1971. *WR 146: 151*

[Univ. Oulu, Oulu, Finland.] Abstract: The contents of the alimentary canal of 50 common lizards *(Lacerta vivipara* Jacq.) captured in different habitats in Finland were analyzed. The prey identified comprised 555 terrestric animals. The main prey were numerically *Araneae* (29.6%), *Diptera* (20.5%) and *Homoptera* (16.9%). *Lepidoptera* was considerable by volume. The diet varied with season and region, possibly according to the invertebrates available in the habitat. The main groups on grass around houses were *Homoptera* (28.3%) and *Araneae* (21.2%), on stony sea-shores *Araneae* (37.0%) and *Diptera* (19.2%), on swampy meadows *Araneae* (33.3%) and *Homoptera* (18.2%), in damp heath forest *Diptera* (51.4%) and *Araneae* (28.0%) and in dry heath forest *Araneae* (36.8%) and *Hymenoptera* (18.4%). *Araneae* and *Diptera* were the dominant prey groups throughout the summer, while the proportion of *Homoptera* was largest in mid- and late summer. An increase was evident in the number of *Phalangida* towards the end of the summer.

Jackson, Crawford G., Jr., and John D. Davis. COURTSHIP DISPLAY BEHAVIOR OF *CHRYSEMYS CONCINNA SUWANNIENSIS*. *Copeia* 1972(2): 385-387, 1 fig. 8 June 1972. *WR 146: 151*

[Miss. State Coll. Women, Columbus.]

Katz, Uri, and Judith Weisberg. ROLE OF SKIN AND NEUROHYPOPHYSEAL HORMONES IN THE ADAPTATION OF THE TOAD *BUFO VIRIDIS* TO HIGH SALINITIES. *Nature* 232(5309): 344-345, 1 fig. 30 July 1971. *WR 146: 152*
[Hebrew Univ. Jerusalem, Jerusalem, Israel.]

Kaufmann, Arnold F., Marshall D. Fox, George K. Morris, Bruce T. Wood, James C. Feeley, and Mary K. Frix. TURTLE-ASSOCIATED SALMONELLOSIS / III. THE EFFECTS OF ENVIRONMENTAL SALMONELLAE IN COMMERCIAL TURTLE BREEDING PONDS. *Am. J. Epidemiol.* 95(6): 521-528. June 1972. *WR 146: 152*
[Epidemiology Program, Center for Disease Control, Atlanta, Ga.]

Kaufmann, Reinhard. DIE LEDERSCHILDKROETE *DERMOCHELYS CORIACEA* L. IN KOLUMBIEN. [THE LEATHERBACK TURTLE *DERMOCHELYS CORIACEA* L. IN COLOMBIA.] *Mitt. Inst. Colombo-Aleman Invest. Cien. Punta de Betin* 5. p. 87-94. 1971. [From Biol. Abstr. 53(10), 1972. In German with English and Spanish summ.] *WR 146: 152*
[Inst. Colomb-Aleman, Apartado Aero 1016, Santa Marta, Colombia.] This is the first report of *D. coriacea*, nesting on the Caribbean coast of Colombia. On a 7.5 km long beach east of Santa Marta, in 1970, 7 nesting females, 4 other nests, and 7 emergences of hatchlings were observed. Some natural history notes in comparison with the nesting behavior of the loggerhead sea turtle are given. Two of the females were tagged with tags numbered D 602 and D 605 (Gainesville), one of them reobseryed nesting again at the same beach, 20 days later.

Khan, M. S. CHECKLIST AND KEY TO THE LIZARDS OF JHANGH DISTRICT, WEST PAKISTAN. *Herpetologica* 28(2): 94-98. June 1972. *WR 146: 152*
[Talim-ul-Islam Coll., Rabwah, West Pakistan.] Abstract: The study is based on the material collected from various parts of the arid Jhangh District, West Pakistan. Seventeen species in 13 genera were recorded. *Gonyocephalus subcristatus* and *Agama minor* were collected for the first time in West Pakistan. A checklist and key are provided.

Klimkiewicz, M. Kathleen. AMPHIBIANS OF MASON NECK. *Atl. Nat.* 27(2): 65-68, illus. Summer 1972. *WR 146: 152*
Summary: Twenty-nine species of amphibians may occur on Mason Neck [Va.]; 24 have been confirmed. Of the 14 species of salamanders, 11 are confirmed and of 15 frogs and toads, 13 are confirmed.

Kminiak, Milan. BIOMETRISCHE UNTERSUCHUNGEN DER POPULATIONEN EINIGER AMPHIBIENARTEN AUF DEM GEBIET SPIŠSKÁ MAGURA (NORDÖSTLICHE SLOWAKEI). [BIOMETRICAL INVESTIGATIONS OF THE POPULATIONS OF SOME AMPHIBIAN SPECIES IN THE AREA OF SPIŠSKÁ MAGURA (NORTHEASTERN SLOVAKIA).] *Zool. Listy* 20(1): 29-38. 1971. In German with English summ. *WR 146: 152*
[Komenský Univ., Bratislava, Czechoslovakia.] *"Triturus alpestris, T. montandoni, T. cristatus, Bombina variegata, Bufo bufo* and *Rana temporaria."*

Kminiak, Milan. SEASONAL CYCLE IN SOME AMPHIBIAN SPECIES IN THE REGION OF SPISSKA MAGURA OBSERVED IN 1965-1968. *Biologia* (Bratislava) 26(8): 611-621. 1971. [From Biol. Abstr. 53(7), 1972. In English with Czech summ.] *WR 146: 152*
Lengths of bionomic stages and of development of new generations were determined in six species *(Triturus alpestris, T. montandoni, T. cristatus, Bombina variegata, Bufo bufo* and *Rana temporaria)*, and a graph was plotted from these data for various stages of the seasonal cycle to determine the effect of certain climatic factors (temperature of water, atmosphere, and air humidity).

Kohler, Anthony J. THE COMMON BOOKS ON REPTILE CARE: A COMPARATIVE OVERVIEW--Part I. *Bull. Md. Herpetol. Soc.* 8(1): 14-26. Mar. 1972. *WR 146: 152*
[1300-30th St., B-1, no. 18, Boulder, Colo.]

Kramek, William C. FOOD OF THE FROG *RANA SEPTENTRIONALIS* IN NEW YORK. *Copeia* 1972(2): 390-392. 8 June 1972. *WR 146: 152*
[State Univ. Agric. & Tech. Coll., Cobleskill, N.Y.]

Lamm, Steven H., Andrew Taylor, Jr., Eugene J. Gangarosa, Herbert W. Anderson, Whitney Young, Mary H. Clark, and Arthur R. Bruce. TURTLE-ASSOCIATED SALMONELLOSIS / I. AN ESTIMATION OF THE MAGNITUDE OF THE PROBLEM IN THE UNITED STATES, 1970-1971. *Am. J. Epidemiol.* 95(6): 511-517. June 1972. *WR 146: 153*
[Epidemiology Program, Center for Disease Control, Atlanta, Ga.] Approximately 280,000 cases of turtle-associated salmonellosis occurred in the U.S. in 1970 and 1971 with related medical expenses amounting to millions of dollars.

Lawler, Adrian R., and John A. Musick. SAND BEACH HIBERNATION BY A NORTHERN DIAMONDBACK TERRAPIN, *MALACLEMYS TERRAPIN TERRAPIN* (SCHOEPFF). *Copeia* 1972(2): 389-390. 8 June 1972. *WR 146: 153*
[Gulf Coast Res. Lab., Ocean Springs, Miss.]

Lueling, K.-H. DER FAERBERFROSCH *PHYLLOBATES BICOLOR* BIBRON DER CORDILLERA AZUL (PERU). [THE COLORED FROG *PHYLLOBATES BICOLOR* BIBRON OF CORDILLERA AZUL (PERU).] *Bonn. Zool. Beitr.* 22(1/2): 161-174, illus. 1971. [From Biol. Abstr. 53(6), 1972. In German with English summ.] *WR 146: 153*
[Mus. A. Koenig, Bonn, Germany.]

Lynch, John D. TWO NEW SPECIES OF FROGS (*ELEUTHERODACTYLUS*: LEPTODACTYLIDAE) FROM THE PÁRAMOS OF NORTHERN ECUADOR. *Herpetologica* 28(2): 141-147, 4 figs. June 1972. *WR 146: 153*
[Univ. Nebr., Lincoln.]

Mansukhani, M. R., and T. S. N. Murthy. FAUNA OF RAJASTHAN, INDIA: VI. AMPHIBIA. *Rec. Zool. Surv. India* 62(1/2): 51-60, illus. 1970. [From Biol. Abstr. 53(3), 1971.] *WR 146: 153*
[Zool. Surv. India, Calcutta, West Bengal, India.] Eight spp. belonging to 3 families and 3 genera.

Martin, Robert F. ARCIFERAL DEXTRALITY AND SINISTRALITY IN ANURAN PECTORAL GIRDLES. *Copeia* 1972(2): 376-381, 1 fig. 8 June 1972. *WR 146: 153*
[Univ. Tex., Austin.]

Marvel, Bill. A FEEDING OBSERVATION ON THE YELLOW-BELLIED WATER SNAKE, *NATRIX ERYTHROGASTER FLAVIGASTER*. *Bull. Md. Herpetol. Soc.* 8(2): 52. June 1972. *WR 146: 153*
[11554 Lockwood Dr., C-1, Silver Spring, Md.] A 36 in. yellow-bellied water snake, *Natrix erythrogaster flavigaster* ate a 10 in. western lesser siren, *Siren intermedia nettingi*.

McClanahan, Lon, Jr. CHANGES IN BODY FLUIDS OF BURROWED SPADEFOOT TOADS AS A FUNCTION OF SOIL WATER POTENTIAL. *Copeia* 1972(2): 209-216, 5 figs. 8 June 1972. *WR 146: 153*
[Calif. State Coll., Fullerton.] *"Scaphiopus couchii."*

McDiarmid, Roy W. COMPARATIVE MORPHOLOGY AND EVOLUTION OF FROGS OF THE NEOTROPICAL GENERA *ATELOPUS, DENDROPHRYNISCUS, MELANOPHRYNISCUS,* AND *OREOPHRYNELLA*. *Bull. Los Angeles County Mus. Nat. Hist. Sci.* 12. p. 1-60, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 153*
[Univ. South Fla., Tampa.]

Mertens, Robert. DIE HERPETOFAUNA SUEDWEST-AFRIKAS. [THE HERPETOFAUNA OF SOUTHWEST AFRICA.] *Abh. Senckenb. Naturforsch. Ges.* 529. p. 5-110. 1971. [From Biol. Abstr. 53(3), 1972. In German.] *WR 146: 153*
[Nat. Mus. Forsch. Inst. Senckenberg, Frankfurt am Main, Germany.] An index of the 239 known species of amphibia and reptiles in Southwest Africa (1970) is given. It includes a bibliographic citation of the original description of each species and data on typical habitats.

Milstead, William W. MORE ON LIZARD HOME RANGES. *Herpetol. Rev.* 4(3): 83-84. June 1972. *WR 146: 153*
[Univ. Tex., Austin.]

Minton, Sherman A., Jr., and Sylvia Kendall Salanitro. SEROLOGICAL RELATIONSHIPS AMONG SOME COLUBRID SNAKES. *Copeia* 1972(2): 246-252, 9 figs. 8 June 1972. *WR 146: 154*
[Ind. Univ. Med. Cent., Indianapolis.]

Morgan, Edward C. THE DISTRIBUTION OF THE SUBSPECIES OF *SCELOPORUS UNDULATUS* (SAURIA: IGUANIDAE) IN LOUISIANA. *Southwest. Nat.* 17(1): 67-72, 2 figs. May 1972. *WR 146: 154*
[Univ. Southwestern La., Lafayette.] Abstract: Examination of 349 Louisiana specimens of *Sceloporus undulatus* substantiates the presence of two subspecies in the state. *Sceloporus u. undulatus* inhabits areas east, and *S. u. hyacinthinus* areas west and north of the Mississippi-Atchafalaya river basin. The absence of specimens from the Mississippi-Atchafalaya river basin may indicate a lack of intergradation in Louisiana.

Morlock, Henry, Scott Herrington, and Marion Oldham. WEIGHT LOSS DURING FOOD DEPRIVATION IN THE EASTERN PAINTED TURTLE, *CHRYSEMYS PICTA PICTA*. *Copeia* 1972 (2): 392-394. 8 June 1972. *WR 146: 154*
[State Univ. Coll., Plattsburgh, N.Y.]

Mueller, Horst. OKOPHYSIOLOGISCHE UND OEKETHOLOGISCHE UNTERSUCHUNGEN AN *CNEMIDOPHORUS LEMNISCATUS* L. (REPTILIA: TEJIDAE) IN KOLUMBIEN. [ECOLOGICAL AND ETHOLOGICAL STUDIES ON *CNEMIDOPHORUS LEMNISCATUS* L. (REPTILIA: TEJIDAE) IN COLOMBIA.] *Forma Functio* 4(3): 189-224, illus. 1971. [From Biol. Abstr. 53 (5), 1972. In German with English and French summ.] *WR 146: 154*
[Univ. Munster, Munster, Germany.]

Mueller, Paul. HERPETOLOGISCHE REISEERINDRUECKE AUS BRASILIEN. [REPORT ON HERPETOLOGICAL EXPEDITIONS TO BRAZIL.] *Salamandra* 7(1): 9-30, illus. 1971. [From Biol. Abstr. 53(3), 1972. In German with English summ.] *WR 146: 154*
[Univ. Saarlandes, Saarbruecken, Germany.] A description is given of the characteristic habitats of the Brazilian herpetofauna with zoogeographic and ecological data for the species that were studied.

Nussbaum, Ronald Archie. SYSTEMATICS OF THE SALAMANDER GENUS *DICAMPTODON* STRAUCH (AMPHIBIA : CAUDATA : AMBYSTOMATIDAE). *Ph.D. thesis, Oreg. State Univ.* 226 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 154*

Patterson, Robert, and Bayard Brattstrom. GROWTH IN CAPTIVE *GOPHERUS AGASSIZI*. *Herpetologica* 28(2): 169-171. June 1972. *WR 146: 154*
[Calif. State Coll., Fullerton.]

Pianka, Eric R. NOTES ON THE BIOLOGY OF *AMPHIBOLURUS CRISTATUS* AND *AMPHIBOLURUS SCUTULATUS*. *West. Australian Nat.* 12(2): 36-41, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 154*
[Univ. Tex., Austin.]

Platz, James Ernest. SYMPATRIC INTERACTION BETWEEN TWO FORMS OF LEOPARD FROG *(RANA PIPIENS* COMPLEX) IN TEXAS. *Copeia* 1972(2): 232-240, 6 figs. 8 June 1972. *WR 146: 154*
[Ariz. State Univ., Tempe.]

Pough, F. Harvey. LEECH-REPELLENT PROPERTY OF EASTERN RED-SPOTTED NEWTS, *NOTOPHTHALMUS VIRIDESCENS*. *Science* (Washington) 174(4014): 1144-1146. 10 Dec. 1971. *WR 146: 154*
[Cornell Univ., Ithaca, N.Y.] Abstract: Eastern red-spotted newts *(Notophthalmus viridescens*, Salamandridae) are rarely attacked by leeches. This protection is not shared by related salamandrids or by *Ambystoma* (Ambystomatidae). Tetrodotoxin is not the repellent. The immunity of *Notophthalmus* to leech parasitism is probably most significant in its aquatic stages, although the terrestrial efts are also protected.

Purdue, James R., and Charles C. Carpenter. A COMPARATIVE STUDY OF THE DISPLAY MOTION IN THE IGUANID GENERA *SCELOPORUS, UTA,* AND *UROSAURUS*. *Herpetologica* 28(2): 137-141, 4 figs. June 1972. *WR 146: 155*
[Univ. Okla., Norman.] Vertical body motion of displaying males was quantified by calculating two ratios which related shoulder and hip movement to head movement during each push-up. Species in the *Uta-Urosaurus* complex fell into two distinct groups. Species of *Urosaurus* formed one group by displaying with considerable hip motion, and species of *Uta (sensu* Mittleman) formed the second group by displaying with little hip motion. Mean hip ratios of these two genera exceeded the range of comparable values for 22 spp. of *Sceloporus*. These data support the division of *Uta* and *Urosaurus*.—From abstr.

Ralin, Dennis Barry. GENETIC COMPATIBILITY AND A PHYLOGENY OF THE TEMPERATE NORTH AMERICAN HYLID FAUNA. *Ph.D. thesis, Univ. Tex.* (Austin). 122 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(7), 1972.] *WR 146: 155*

Rathor, M. S. MOVEMENTS, HOMING BEHAVIOUR AND TERRITORY OF THE INDIAN SAND LIZARD, *OPHIOMORUS TRIDACTYLUS* (BLYTH) BOULENGER. *Japanese J. Ecol.* 20(5): 208-210, illus. 1971. [From Biol. Abstr. 53(4), 1972.] *WR 146: 155*
[Jodhpur, Rajasthan, India.]

Rogers, James S. DISCRIMINANT FUNCTION ANALYSIS OF MORPHOLOGICAL RELATIONSHIPS WITHIN THE *BUFO COGNATUS* SPECIES GROUP. *Copeia* 1972(2): 381-383, 1 fig. 8 June 1972. *WR 146: 155*
[La. State Univ., New Orleans.]

Savage, Jay M. THE HARLEQUIN FROGS, GENUS *ATELOPUS*, OF COSTA RICA AND WESTERN PANAMA. *Herpetologica* 28(2): 77-94, 9 figs. June 1972. *WR 146: 155*
[Univ. Southern Calif., Los Angeles.] A review of the harlequin frogs, genus *Atelopus*, from Costa Rica and western Panama indicates the presence of a slope species *(A. varius)* and two allopatric highland species, *A. senex* in central Costa Rica and *A. chiriquiensis* in southern Costa Rica and adjacent Panama.—From abstr.

Schmidt, Robert S. RELEASE CALLING AND INFLATING MOVEMENTS IN ANURANS. *Copeia* 1972(2): 240-245, 4 figs. 8 June 1972. *WR 146: 155*
[Loyola Univ. Strich School Med., Maywood, Ill.] Abstract: The movements of pertinent peripheral structures during release calling in *Scaphiopus hammondi, S. couchi, Bufo marinus,* and *B. americanus*, and during inflating in *B. marinus* are described and illustrated.

Schuierer, Frederick W. THE CURRENT STATUS OF THE ENDANGERED SPECIES *BUFO EXSUL* MYERS DEEP SPRINGS VALLEY, INYO COUNTY, CALIFORNIA. *Herpetol. Rev.* 4(3): 81-82. June 1972. *WR 146: 155*
[Cabrillo Coll., Aptos, Calif.] Abstract: The current condition of *B. exsul* appears good when compared to its adult population size in 1962. Collections made by amateur and professional herpetologists may be or may become its biggest threat. It is recommended to: "Let it be! "

Schulz, J. P. NESTING BEACHES OF SEA TURTLES IN WEST FRENCH GUIANA. *Proc. K. Ned. Akad. Wet. Ser. C Biol. Med. Sci.* 74(4): 398-404, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 155*
[Dienst's Lands Bosbeheer, Paramaribo, Surinam.] Four, and possibly five, species of sea turtles nest on the beach between the mouth of the Marowijne River and the Organabo Creek in West French Guiana. *Dermochelys coriacea* (L.) nests in very large numbers, and probably for this species this beach is the world's most important nesting beach.

Schwartz, Albert. A NEW SPECIES OF *ELEUTHERODACTYLUS* (AMPHIBIA, LEPTODACTYLIDAE) FROM HISPANIOLA. *Ann. Carnegie Mus.* 43(2): 25-32, illus. 1971. [From Biol. Abstr. 53(11), 1972.] *WR 146: 155*
[Miami-Dade Jr. Coll., Miami, Fla.]

Schwartz, Albert. STUDIES ON THE FAUNA OF CURACAO AND OTHER CARIBBEAN ISLANDS: NO. 128. A SYSTEMATIC REVIEW OF THE HISPANIOLAN SNAKE GENUS *HYPSIRHYNCHUS*. *Uitg. Natuurwet. Studiekring Suriname Ned. Antillen* 62. p. 63-94, illus. 1971. [From Biol. Abstr. 53(5), 1972.] *WR 146: 156*
[Miami-Dade Jr. Coll., Miami, Fla.]

Sexton, Owen J., Joan Bauman, and Edward Ortleb. SEASONAL FOOD HABITS OF *ANOLIS LIMIFRONS*. *Ecology* 53(1): 182-186, 5 figs. Winter 1972. *WR 146: 156*
[Washington Univ., St. Louis, Mo.] Abstract: The seasonal food habits of *Anolis limifrons*, an iguanid lizard, were studied by examining the stomachs of 512 individuals collected on Barro Colorado Island, Panama Canal Zone, during three periods. Frequency distributions of different size classes of potential prey were obtained from leaf litter and low vegetation samples. The lizards selected larger size classes of potential prey. All size classes of predators captured the smaller size classes of prey, but the larger prey were taken by larger predators. More female than male lizards had food in their stomachs. There was no wet season-dry season difference in frequency of food found in the stomachs.--Courtesy/ Paul A. Stewart.

Sikharulidze, N. I., and A. Y. Kadagishvili. [A STUDY OF THE EMOTIONAL REACTIONS OF LIZARDS TO REJECTED FOOD.] *Soobshch. Akad. Nauk Gruz. SSSR* 61(2): 433-435. 1971. [From Biol. Abstr. 53(4), 1972. In Russian with English summ.] *WR 146: 156*
[Tiflis State Univ., Tiflis, USSR.] The behavior of lizards which was caused by unpleasant and rejected food was studied. In the spring and summer months (May, June, July) the lizards' emotional reactions to negative food lasted for 8-10 min. after taking the food. In autumn and winter their negative reactions were weaker and lasted for 6-8 min.

Smyth, M. PEARSON ISLAND EXPEDITION 1969: IV. REPTILES. *Trans. Roy. Soc. S. Australia* 95(3): 147-148. 1971. [From Biol. Abstr. 53(12), 1972.] *WR 146: 156*
[Univ. Adelaide, Adelaide, South Australia.] Six species of lizards [*Phyllodactylus marmoratus, Amphibolurus* sp., *Morethia lineoocellata, Lerista tetradactyla, Leiolopisma entrecasteauxii, Heimisrgis peronii*] but no snakes occur on the Pearson Islands; two of these are recorded from the Pearsons for the first time.

Songdahl, John H., and Victor H. Hutchison. THE EFFECT OF PHOTOPERIOD, PARIETALECTOMY AND EYE ENUCLEATION ON OXYGEN CONSUMPTION IN THE BLUE GRANITE LIZARD, *SCELOPORUS CYANOGENYS*. *Herpetologica* 28(2): 148-156, 5 figs. June 1972. *WR 146: 156*
[Univ. R.I., Kingston.]

Spotila, James R. ROLE OF TEMPERATURE AND WATER IN THE ECOLOGY OF LUNGLESS SALAMANDERS. *Ecol. Monogr.* 42(1): 95-125, 22 figs. Winter 1972. *WR 146: 156*
[Univ. Mich., Ann Arbor.] *Plethodon glutinosus* did not show any specific adaptation in its thermal responses or water relations that would account for its widespread distribution in the eastern United States. *Plethodon ouachitae* and *P. caddoensis* apparently have survived in the Ouachita Mountains due to favorable microhabitats and their ability to burrow deep beneath talus-covered slopes during hot and dry summers. Surface activity of *P. caddoensis* is limited in the summer by hot and dry conditions in its microhabitat.--From abstr. Courtesy/ Paul A. Stewart.

Tanaka, Hiroshi, Yoshitaka Wada, Yuzuru Oguma, Manabu Sasa, Yoshihisa Noboru, Tsuguo Ono, and Niroku Matsushita. [A METHOD OF POPULATION ESTIMATION FOR THE HABU, *TRIMERESURUS FLAVOVIRIDIS*.] *Snake* 3(1): 9-13. 1971. [From Biol. Abstr. 53(10), 1972. In Japanese with English summ.] *WR 146: 156*
[Univ. Tokyo, Tokyo, Japan.] A study for estimating the population of *T. flavoviridis* was carried out in the Amami Islands using the catch-curve and Zippin's methods.

Trinca, J. C., J. J. Graydon, J. Covacevich, and C. Limpus. THE ROUGH-SCALED SNAKE (*TROPIDECHIS CARINATUS*): A DANGEROUSLY VENOMOUS AUSTRALIAN SNAKE. *Med. J. Australia* 58-2(16): 801-809, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 146: 157*

[Commonw. Serum Lab., 45 Poplar Rd., Parkville, Victoria, Australia.] A comprehensive study was made of the natural distribution and venom effects of *T. carinatus*, a little-known species which is not generally regarded as dangerous to man. Laboratory studies and the effects in animals, and in 12 authentic cases of human bites, with one fatality, show that the venom of the rough-scaled snake is comparable in toxicity to those of the better-known dangerously venomous Australian snakes. Its pugnacity when provoked and its unpredictable temperament make it a snake that is best left alone. The distribution of positively identified specimens shows that it is located in the coastal areas of northern New South Wales, southeastern Queensland and north-eastern Queensland. Its apparent absence from large areas of coastal, central and far northern Queensland is attributed to its liking for relatively cool, moist regions.

Tyler, M. J., and J. I. Menzies. A NEW SPECIES OF MICROHYLID FROG OF THE GENUS *SPHENOPHRYNE* FROM MILNE BAY, PAPUA. *Trans. Roy. Soc. S. Australia* 95(2): 79-83, illus. 1971. [From Biol. Abstr. 53(9), 1972.] *WR 146: 157*

[South Australian Mus., North Terrace, Adelaide, South Australia.] *"S. dentata."*

Vojtková, Ludmila, and Karel Křivanec. HELMINTOFAUNA ŽAB MORAVY. [HELMINTH FAUNA IN MORAVIAN FROGS.] *Spisy Prirodoved. Fak. Univ. J. E. Purkyne Brne* 515. p. 253-281, illus. 1970. [From Biol. Abstr. 53(11), 1972. In Czech with Russian and German summ.] *WR 146: 157*

[Univ. J. E. Purkyne, Brno, Czechoslovakia.]

Wada, Yoshitake, Hiroshi Tanaka, Yuzuru Oguma, Manabu Sasa, Kenji Ikeda, Etsuro Motoi, Junshi Kawai, and Tsuguo Ono. [RADIO-TRACKING OF MOVEMENT OF HABU, *TRIMERESURUS FLAVOVIRIDIS.*] *Snake* 3(1): 20-23, illus. 1971. [From Biol. Abstr. 53(10), 1972. In Japanese with English summ.] *WR 146: 157*

[Univ. Tokyo, Tokyo, Japan.] Radio-tracking of the movements of the habu was carried out on an island of Amami to elucidate its nocturnal behavior.

Waddick, James W. THERMAL ADAPTATION IN A TROPICAL AMPHIBIAN: THE PHYSIOLOGY AND ECOLOGY OF *ATELOPUS IGNESCENS* (CORNALIA) (ATELOPODIDAE) IN THE PARAMO OF SOUTH AMERICA. *Ph.D. thesis, Univ. Kans.* 46 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(10), 1972.] *WR 146: 157*

Walhovd, Af Helge. FINDES DER MAERKELIGE STALORME I DANMARK? [ARE ANY REMARKABLE SLOWWORMS *(ANGUIS FRAGILIS)* FOUND IN DENMARK?] *Flora Fauna* 76(2): 69-70. 1970. [From Biol. Abstr. 53(6), 1972. In Danish with English summ.] *WR 146: 157*

[Arhus Univ., Arhus, Denmark.]

Weathers, Wesley W., and Fred N. White. HEMATOLOGICAL OBSERVATIONS ON POPULATIONS OF THE LIZARD *SCELOPORUS OCCIDENTALIS* FROM SEA LEVEL AND ALTITUDE. *Herpetologica* 28(2): 172-175. June 1972. *WR 146: 157*

[Rutgers, New Brunswick, N.J.]

Wiewandt, Thomas A., Charles H. Lowe, and Mervin W. Larson. OCCURRENCE OF *HYPOPACHUS VARIOLOSUS* (COPE) IN THE SHORT-TREE FOREST OF SOUTHERN SONORA, MEXICO. *Herpetologica* 28(2): 162-164, 3 figs. June 1972. *WR 146: 157*

[Cornell Univ., Ithaca, N.Y.] Abstract: A considerable northward range extension for the genus *Hypopachus* in western Mexico is reported. Also included are field observations of habitat and chorus structure, a sonogram of the mating call, and color notes.

Wilbur, Henry M. COMPETITION, PREDATION, AND THE STRUCTURE OF THE *AMBYSTOMA-RANA SYLVATICA* COMMUNITY. *Ecology* 53(1): 3-21, 3 figs. Winter 1972. *WR 146: 158*

[Univ. Mich., Ann Arbor.] The uncertainty of the temporary pond environment precludes extreme ecological specialization among six species of salamanders. Coexistence is a consequence of the relative advantages of the species in different years and the long adult life spans. The complexity of the food web and "predator switching" are probably important elements of the density-dependent interactions that contribute to the stability of communities within seasons.--From abstr. Courtesy/ Paul A. Stewart.

Williamson, Michael A. EXCAVATION ACTIVITIES OF CAPTIVE SNAKES. *Bull. Philadelphia Herpetol. Soc.* 19: 2. 1971. *WR 146: 158*

[Univ. N. Mex., Albuquerque.]

Zinner, Hermann. ON ECOLOGY AND THE SIGNIFICANCE OF SEMANTIC COLORATION IN THE NOCTURNAL DESERT-ELAPID *WALTERINNESIA AEGYPTIA* LATASTE (REPTILIA, OPHIDIA). *Oecologia* (Berlin) 7(3): 267-275, illus. 1971. [From Biol. Abstr. 53(8), 1972.] *WR 146: 158*

[Univ. Negev, Beer-Sheba, Israel.]

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Manuscript for this issue was completed 16 January 1973

★ U. S. GOVERNMENT PRINTING OFFICE : 1973 O - 494-669

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